Your COMPUTER

► SEPTEMBER 1986 VOL. 6 NO. 9

BRITAIN'S BIGGEST-SELLING HOME COMPUTER MAGAZINE

£1

Denmark	DKr.	36.00
France	Fr.	52.50
Germany	DM.	9.50
Greece	Dra.	360.00
Netherlands	DFl	8.90
Italy	L	4300
New Zealand	NZ$	3.70
Spain	Pts.	425.00

TAPPING THE POWER OF YOUR COMPUTER

UTILITIES BUYERS' GUIDE

COMPUTER MAINTENANCE SURVEY

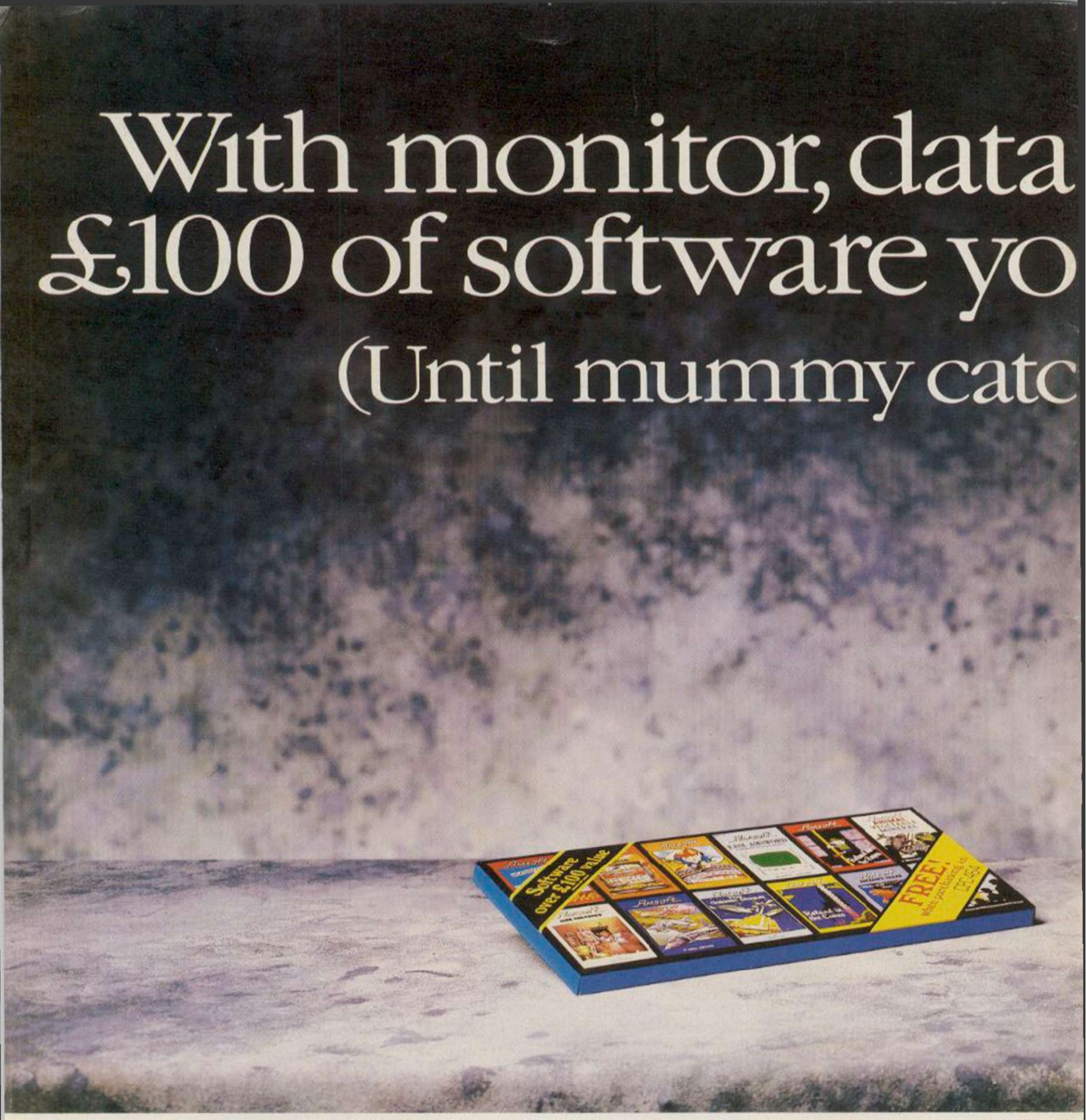
8-PAGE PCW SHOW GUIDE

£10,000 PRIZE TO BE WON IN THE GOLDEN TRIVIA CHALLENGE

EXCLUSIVE: ACORN ENTERS THE PC MARKET

CLUBS ★ HINTS & TIPS ★ NEWS ★ SOFTWARE PREVIEWS

With monitor, data
£100 of software yo
(Until mummy catc



With the Amstrad 464 home computer the fun starts as soon as you get it home.

Because unlike many other home computers the 464 comes complete with its own green screen or full colour monitor.

It also comes with a convenient built-in datacorder.

And you get £100 worth of software with games like Harrier Attack and Sultan's Maze. Not to mention Oh Mummy.

64K of RAM means you have plenty of memory to play with. And there are over 200 Amstrad games you can play, many exclusive to Amstrad.

But games are only half the fun on the 464.

The kids can learn spelling and arithmetic with software like Wordhang and Happy Numbers.

Whilst adults will love the way that it helps around the house with budgeting and accounts.

AVAILABLE AT: ALLDERS · BOOTS · CLYDESDALE · COMET · CONNECT · CURRYS · DIXONS · ELECTRIC SUPREME · LASKYS · JOHN LEWIS · JOHN MENZIES · POWER CITY · RUMBELOWS

corder and u can't lose.

hes you.)

To help you make the most of your 464, you can join the Amstrad User Club.

And there are lots of books and magazines devoted to it as well.

What's more you can buy joysticks, printers, disc drives, speech synthesisers and light pens to make it even more fun.

But perhaps the most pleasurable thing about the 464 is the price.

The complete home computer costs just £199 with green screen or £299 with colour monitor.

Not much to pay for a chance to get away from mummy.

ULTIMATE · W.H. SMITH · WIGFALLS · AND GOOD INDEPENDENT COMPUTER STORES

Please send me more information.

Name_____

Address_____

_____

_____ 464/YCI

The Amstrad 464.

The complete home computer.

Amstrad P.O. Box 462, Brentwood, Essex CM14 4EF.

Editor
Gary Evans
Software Editor
Francis Jago
Staff Writer
Anthony Thompson
Sub Editor
Harold Mayes MBE
Production Editor
Jim McClure
Production Assistant
Nick Fry
Editorial Secretary
Sheila Baker
Designer
Chris Winch
Editorial 01-222 9090

Group Advertisement Manager
David Lake
Advertisement Executive
Ian Faux
Classified
Paul Monaf
Advertising 01-222 9090

Publisher
Paul Coster
Financial Director
Brendan McGrath
Managing Director
Richard Hease

Your Computer,
79-80 Petty France,
LONDON SW1H 9ED

ISSN 0263 0885

© 1986 Focus Investments Limited.
Printed by The Riverside Press, England.
Typeset by Time Graphics Ltd., Northampton.
Member of the Audit Bureau of Circulation.

Distributed by Business Press International, Quadrant House, Surrey SM2 5AS. Telephone 01-661 3239.

Reasonable care is taken to avoid errors in this magazine but no liability is accepted for any errors which may occur. No material in this publication may be reproduced in any way without the written consent of the publishers. The publishers will not accept responsibility for the return of unsolicited manuscripts, listings, data tapes or discs.

We will assume permission to publish all unsolicited material unless otherwise stated. We cannot be held responsible for the safe return of any material submitted for publication. Please keep a copy of all your work and do not send us original artwork.

Unfortunately we are unable to answer lengthy enquiries by telephone. Any written query requiring a personal answer MUST be accompanied by a stamped, self-addressed envelope; please allow up to 28 days for a reply.

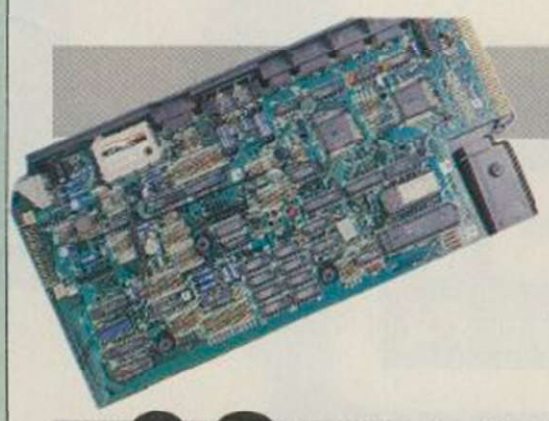
Subscriptions: U.K. £15 for 12 issues, Overseas (surface mail) £25 – airmail rates on request. Please make cheques/postal orders payable to Focus Investments (allow 5 weeks from receipt of order to delivery of first subscription copy). Send orders to Your Computer Subscriptions, Oakfield House, Perrymount Road, Haywards Heath, RH16 3DH. Telephone (0444) 459188.

Back issues of the magazine from January 1986 onwards are available for £1.50 (U.K.), £3 (Overseas) from the Back Issues Department, 79-80 Petty France, London, SW1H 9ED.

CONTENTS

Person
Show G
Turn to page 47
major comput

24
EXCLUSIVE – ACORN M19
Acorn moves into the PC arena with a badge-engineered version of the low-end Olivetti machine.

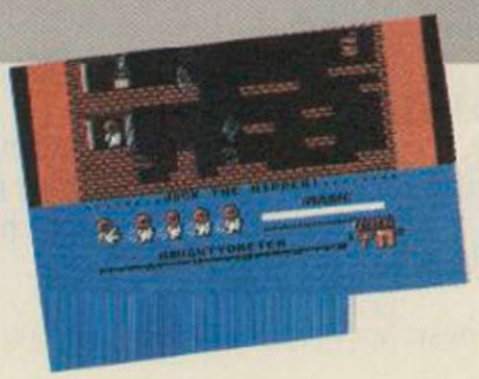


28
MICRO FIRST AID
Where to go when your computer needs repair.

32
A SPORTING CHANCE
The *Your Computer* reviewers get into shape with some sports simulation software.

36
BUYERS' GUIDE TO UTILITIES
Use the power of your computer with a range of programming aids.

87
JACK THE NIPPER COMPETITION
The new Gremlin game provides the theme for this competition.



al Computer World – Guide

For the start of an eight-page guide to the g event of the year.

62

EMR PERFORMER

A value-for-money package for making music on the Amstrad CPC computers.

22

DREAM MACHINE

Portable PC power in an elegant integrated package.

83

YOUR COMPUTER COURSE INDEX

A guide to making the most of our six-part guide to programming.

57

GOLDEN TRIVIA CHALLENGE

£10,000 worth of prizes in a very trivial competition.

59

ADVENTURE SECTION

Latest games reviewed, plus hints and tips.

NEWS
10 Who's who and what's new in computing.

CHARTS
13 Gallup's guide to software sales.

NEW PRODUCTS
15 Latest micro peripherals previewed.

SOFTWARE PREVIEWS
18 News of tomorrow's software.

SOFTWARE NEWS
19 Surveying the software scene.

COMMUNICATIONS NEWS
21 BBC software to access Minitel.

COMPANY PROFILE – GREMLIN
90

SOFTWARE SHORTLIST
43 Assessing the latest in games software.

DR LOGO
65 The concluding part explains lists and errors.

SOFTWARE EXCHANGE
68 Readers' software on offer at budget prices.

EDUCATION
70 The role of the computer in in the classroom.

CAREERS
71 Computers as a profession.

CLUBS
72 Getting together with other micro enthusiasts.

LETTERS
75 Readers' reactions to *Your Computer.*

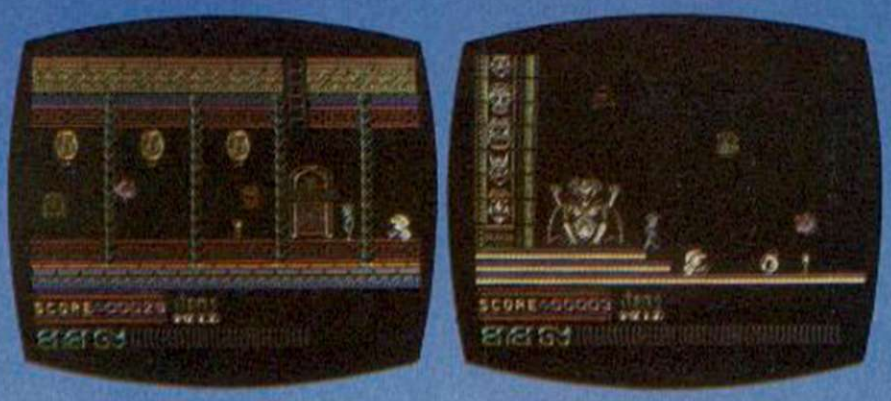
PROGRAM FILE
76 Start tapping with our program listings.

NEXT MONTH
98 Highlights of the October issue.

DIARY
98 This month's events in the computing calendar.

DYNAMITE DAN II

The Hero Returns!



Find and destroy Blitzen's secret record-pressing plant, hidden deep in the 8-island complex of Arcanum. 200 screens of crafty sprites, foot-tapping, music, and totally addictive gameplay!

OUT NOW FOR SPECTRUM £7.95
AMSTRAD VERSION COMING SOON

MIRRORSOFT

Purnell Book Centre, Paulton, Bristol BS18 5LQ

THE ULTIMATE UTILITY FOR YOUR COMPUTER

SPEECH!

NO EXTRA HARDWARE REQUIRED

AS REVIEWED ON BBC TV

FOR THE COMMODORE AMSTRAD AND BBC COMPUTERS

COMMODORE 64/128
Cassette **£9.95**
Disc **£11.95**

AMSTRAD CPC464/664/6128
Cassette **£9.95**
Disc **£14.95**

BBC MICROS: B, B+, Master
Cassette **£9.95**
Disc **£11.95**

At last, speech synthesis at a price you can afford. SPEECH! works entirely in software taking up less than 9K of RAM: no extra hardware whatsoever is required. Unlike other systems, SPEECH! has an unlimited vocabulary: it will say anything you want it to, and is simplicity itself to use. Simply type in: ***SAY I AM A TALKING COMPUTER, AS EASY TO USE AS 1 2 3...** and the computer speaks.

SPEECH! has a built-in parser which translates English words into "phonemes", or speech particles. There are 49 phonemes and 8 different pitch settings which can be used directly by the *SPEAK command (eg. *SPEAK/HEH4LOW4) so stress or intonation can easily be added wherever desired. You can change the overall pitch with the *PITCH command.

Every copy of SPEECH! comes complete with extra software:
DEMO — shows off all the features,
SPELL — an innovative educational program,
SAYFILE — speaks the lines of your programs.

Applications in:
- games
- education
- business
- utilities

THE RECENTLY RELEASED BBC MICRO VERSION HAS BEEN GREETED WITH ACCLAIM AND INCREDULITY:—

REVIEWS ON BBC-1 AND BBC-2 TV

Saturday Superstore (BBC-1)
"This is knockout! This is great! ... Wonderful! Very, very clever." ... Fred Harris

Micro Live (BBC-2)
"Really good value!" ... John Coll

REVIEWS IN THE COMPUTER PRESS

"The reproduction is suprisingly good, and certainly on a par with some of the more expensive speech interfaces I have heard. An excellent low cost speech synthesiser that really is very good value for money." ... ACORN USER

"... incredibly easy to use. The end result is as good as anything I've heard this side of the Amiga." ... POPULAR COMPUTING WEEKLY

"Overall an excel ent package" ... MICRONET 800.

"This is one utility which cannot be beaten on quality or price" ... The MICRO USER.

"SPEECH! from Superior Software is a truly remarkable offering. A rare gem indeed. Superior Software has produced a price breakthrough by achieving an apparent technical impossibility." ... A & B COMPUTING.

Access VISA

24 HOUR TELEPHONE ANSWERING SERVICE FOR ORDERS

OUR GUARANTEE
- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.

SUPERIOR SOFTWARE Limited

Dept. SP14, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: 0532 459453

WE PAY TOP ROYALTIES FOR HIGH QUALITY SOFTWARE

BRIGHTON COMPUTER EXCHANGE

THE No. 1 ATARI SPECIALIST

AMAZING OFFERS!

ATARI 1040ST

With 1 Megabyte drive, mono monitor, mouse and software

£799.00 inc. VAT

ATARI 520STM

With 500K drive + mono monitor. Delivered free anywhere in Great Britain

£595.00 inc. VAT

WE HAVE THE LARGEST RANGE OF ATARI ST SOFTWARE
PHONE FOR QUOTE

BRIGHTON COMPUTER EXCHANGE
2 Ann Street,
Brighton BN1 4GP
Tel: 0273 – 686650/676839

Access

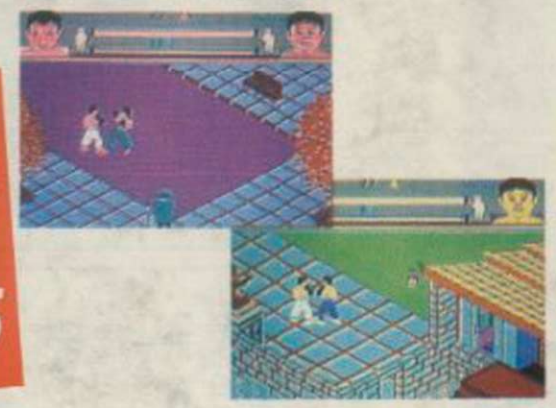
VISA

THAI BOXING

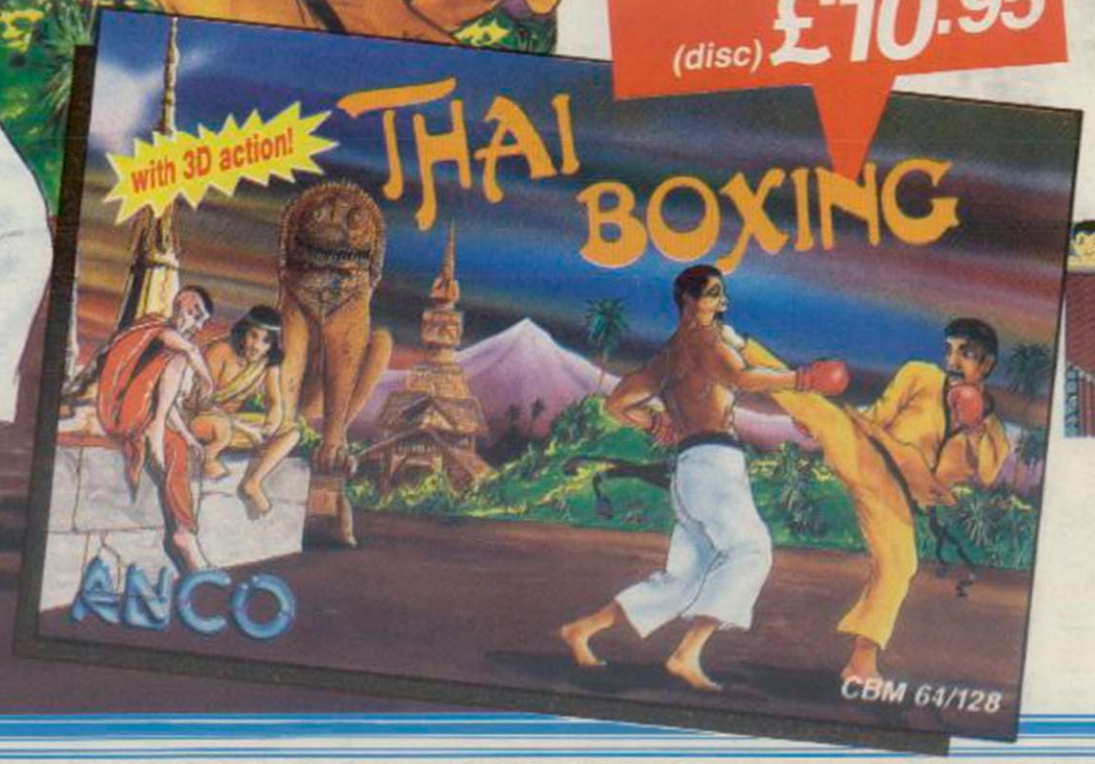
with 3D action!

- Full 3D action – 1 player or 2 player option. Lightning moves – Six Spectacular Backdrops.
- See the cuts and the bruises on the faces of the boxers, as they kick and punch in this gruelling contest.
- Enhanced 128 versions for that extra smooth animation and sound effects.

CBM 128 Disc only £11.95
CBM 64/128 (cass) £7.95
(disc) £10.95



COMING SOON
- AMSTRAD
- MSX
- SPECTRUM
- ATARI ST
- AMIGA



ANCO

ANCO SOFTWARE, 4 WEST GATE HOUSE, SPITAL STREET, DARTFORD, KENT DA1 2EH. Telephone: 0322 92513/92518
Mail Order: Payment by Cheque, P.O., Visa or Access. 24 Hour Credit Card Service: 0322 522631.

COMMENT

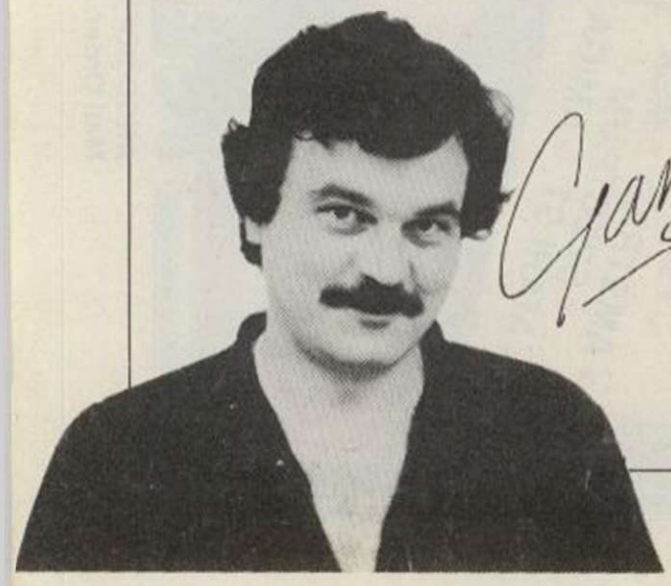
There can be little doubt that the Personal Computer World Show is one of the highlights of the computing year. One of the longest-established microcomputer exhibitions, it began life nine years ago in a small west London hotel. Since that time it has grown in size and is now one of the biggest such shows to take place in the U.K.

The success of the PCW Show can be attributed to a number of factors, from its timing to the exceptional mixture of business and home computer manufacturers which book stands. Early September is an ideal time for the event; the traditionally quiet sales period is by then left behind and companies are ready to announce products which will be available in time for the buying bonanza which characterises the later months of the year in the time leading to Christmas.

The PCW Show also manages to avoid the constraints of the many this-or-that user shows which take place throughout the year. That gives the Show a broad appeal for anyone with an interest in computing, whether they own a computer or are considering buying a machine. For those wishing to upgrade existing hardware, the Show also provides plenty of ideas.

With the division between business and home micros becoming increasingly blurred, the PCW computer is just one machine which has contributed to this. With the current crop of low-cost PC clones adding further to the confusion, the Show provides a rare opportunity for visitors to see a broad range of hardware under one roof.

In recognition of the importance of the Show, we have devoted eight pages of this issue of *Your Computer* to an extensive preview of the event. If you intend to visit the Show, make sure you have your copy of the magazine handy to guide you round the many attractions.



Gary Evans.

The IBM PC home computer

The IBM PC, or at least many of the low-cost imitators of it, is now officially a home computer. Amstrad this month joins the growing army of compatible manufacturers to offer PCs for less than £500, the traditional price barrier between home and business computers, with the full expectation that the £300 PC could be here by the end of the year – at least as a minimum single-drive starter system.

The Amstrad offering was expected to be unveiled officially just before the Personal Computer World Show in London this month.

The price for a basic Amstrad PC with 256K RAM, twin disc drives, bundled software and a monochrome monitor is expected to be £499. The system should have the Digital Research PC-compatible DOS-Plus operating system, the same GEM graphics-based environment as the Atari ST.

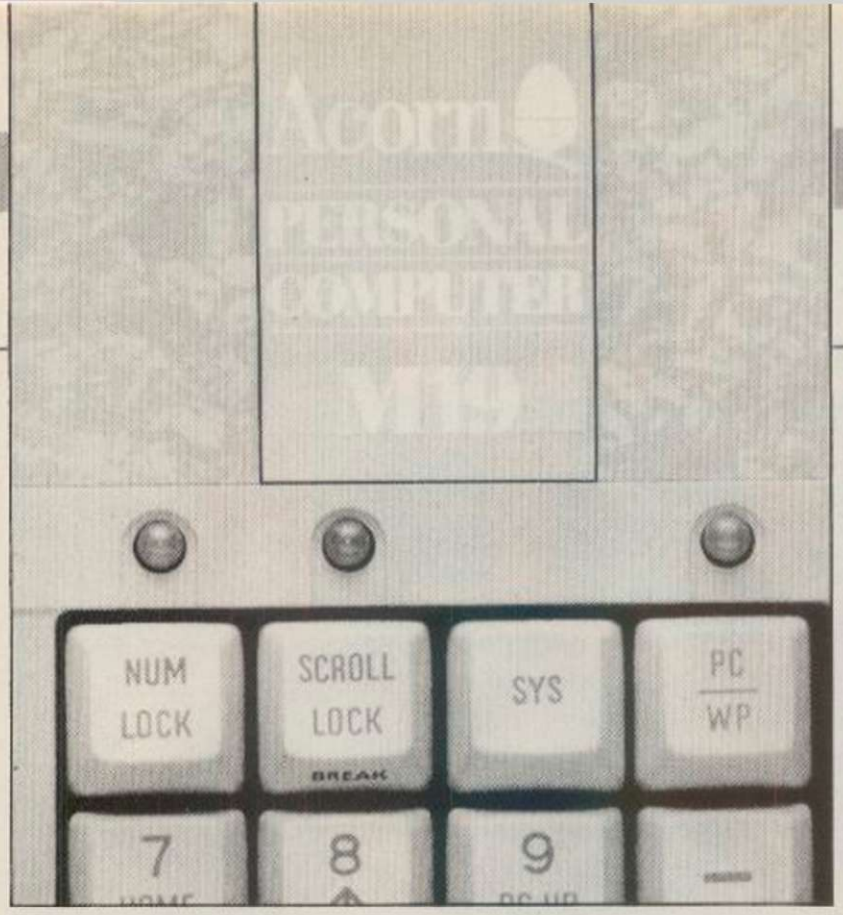
Unlike many other PCs running GEM, however, the speed of the Amstrad offering should be comparable to that of the Atari as it uses an 8086 processor running at a full 8MHz clock speed, the same as the IBM AT.

While the Amstrad move will definitely have a big impact on the public perception of the PC market, it certainly will not be the only company offering PCs at home computer prices. Bondwell, Citadel, Walters and many others are busy crowding into the £500-ish PC-compatible markets and existing PC compatibles such as the Tandy 1000 are falling in price ever nearer the £500 mark.

The real question is how well the PC will fare as a home computer. Although there has always been a good deal said about how Americans have much more disposable income than people on this side of the Atlantic, and that PCs have been bought as home computers in the States, there are still few games and entertainment titles available for it.

There are no on-board joystick ports, colour is still an expensive option, sprites cannot be defined easily and there is neither a version of *Elite* nor *The Pawn* available for the PC. We have to ask, with tongue firmly planted in cheek, how can it survive against the likes of the Spectrum and the CPC machines with such a handicap?

On a more serious note, one cannot help but wonder exactly who will be attracted by these home-computer-priced PCs. With the exception of the offering from Amstrad and some of the other well-known and respected manufacturers, many of the smaller companies offering inexpensive PC clones may not have the clout to attract the interest of businesses, nor the entree into the home market to sway people from the likes of the Atari ST, CPC and Amstrad/Sinclair entertainment machines.



Acorn sprouts new machines

The biggest number of new releases expected from any home computer manufacturer at the PCW Show was from an unlikely quarter. It is not Atari, Amstrad/Sinclair or even Commodore, but Acorn.

In addition to unveiling finally production versions of its Master 512 MS-DOS variation on the Master 12B computer – previewed in *Your Computer* in March – Acorn will also show its badged version of the Olivetti M-19 IBM PC-compatible and was expected to announce a new Baby BBC.

The Baby BBC could put Acorn back in the market it abondoned with its last cut-down BBC, the Electron. Both pricing and specification are expected to be somewhat high this time. The word at press time was that the new machine will include a built-in 3.5in. disc drive, offer compatibility with the BBC Master series and have a monochrome monitor for less than £600.

The cost reductions, which allow Acorn to bundle the drive and monitor, are expected to be in the interfacing. If true, that could be a major stumbling-block as the lack of BBC-compatible interfaces was always an impediment to the success of the Electron.

The Acorn Personal Computer M19, on the other hand, is a much safer bet. In its Olivetti version, which differs only from the Acorn offering in the colour of the badge at the front, the machine has been well-received.

The only real criticism the Olivetti M-19 has met so far has been the price and, at £1,499, Acorn is likely to suffer the same slings and arrows. Although the price includes a high-resolution monochrome monitor, twin 360K drives, PC standard keyboard, 256K RAM – expandable internally to 640K – serial and parallel ports, mouse interface and Econet networking it will still look expensive when compared to the new Amstrad PC.

The third new Acorn machine, the Master 512, has 512K RAM, MS-DOS, GEM and DOS-Plus and costs £345.26 plus VAT. That price does not include the disc drive needed to run the bundled software.

Compliment set to tackle Amstrad

Sales of the Amstrad PCW range of computers reached nearly a quarter of a million units since the launch in March, 1985. Many companies have begun selling their machines at greatly-reduced prices in an attempt to share in the success but, until now, none has attempted to produce a similar machine within the same price range.

On September 20, Saga Systems will launch the Compliment, a new Z-80-based micro which it hopes will beat Amstrad at its own game. Costing £299 plus VAT, £100 less than the PCW8256, the package will include a 3.5in. disc drive, a 100cps dot matrix printer and bundled software. A monitor is not included in the price but, even when that is taken into consideration, the overall cost could still be less than the Amstrad machine.

Saga is better-known for its range of add-on keyboards for the Spectrum and it is likely that the new machine will be based around one of them.

Competition winners

The answers to the competition in the June issue for a chance to fly in the famous Pit Special Aircraft were:

1. VIFF Vector in forward flight
2. a. GR3
b. FRS1
C. AV8A or AV8B
3. Operation Corporate
5. 1969.

Congratulations to the three first prizewinners, Andrew O'Donnell, 143 Henley Road, Caversham, Reading, Berkshire RG4 0DW; 2340878 Pte Milner, HQ company, 1 Green Howards, Mercer Barracks, BFPO 36; and D Hesford, 12 Harrison Street, Gee Cross, Hyde, Cheshire SK14 5RJ.

We liked particularly the beautiful design of Hesford. Twenty-five runners-up will receive the game and all entrants will receive a Strike Force Harrier poster.

Now there will be a charge for guide

The price of Amstrad PCW 8256 and 8512 computers has risen effectively by £5. The rise is a result of the decision to charge for the guide to the Mallard Basic software until recently supplied free.

According to an Amstrad spokesman, only one in 10 PCW users uses the Basic language and on that basis it decided to supply the manual as an optional extra. Thankfully, though, the Basic software is still supplied as a CP/M file on side two of the system discs.

Commodore says 'we shall C'

Commodore was expected to unveil its updated Commodore 64C at the Personal Computer World Show this month. Despite the existence of the Commodore 128 and 128D machines, which are compatible with the existing 64, the new machine is expected to be a 64K machine.

It will be in a Commodore 128-style case and is expected to include the GEOS Macintosh-style graphics interface and improvements in operating speed and performance.

Probably the most important thing about the Commodore 64C, however, is that it will replace the existing Commodore 64, bringing an end to production of what is arguably the world's most popular 6502-based – actually 6510 – home computer.

The machine is expected to sell for less than £200 but Commodore was revealing nothing at press time as it had existing stocks of 64s it wanted to move first.

SPECTRUM 7·95 | COMMODORE 64 £8·95 | AMSTRAD £8·95

MIAMI VICE™*

ocean

Chill out

WE'RE CRUISIN' YOUR HIGH STREET NOW

OCEAN SOFTWARE
OCEAN HOUSE 6 CENTRAL ST
MANCHESTER M2 5NS
TELEPHONE 061 832 6633
TELEX 669977

*TM and © 1984
Universal City Studios, Inc.
All Rights Reserved.
Licensed by Merchandising Corporation of America, Inc.

This chart is based on the MicroScope chart as compiled by Gallup.

MicroScope GALLUP

MicroScope is the weekly trade paper of the microcomputer industry. If your computer store doesn't display the latest MicroScope chart, ask the manager to call Mark Salmon on 01-631 1433 — we'll send a copy every week.

THE CHARTS

TOP 20

1	GHOSTS AND GOBLINS	ELITE	SP CO AM
2	LEADER BOARD	U.S. GOLD	CO
3	GREEN BERET	IMAGINE	SP CO AM
4	KUNG FU MASTER	U.S. GOLD	SP CO AM
5	JACK THE NIPPER	GREMLIN GRAPHICS	SP AM MS
6	ACE	CASCADE	SP CO +4
7	KNIGHT GAMES	ENGLISH	CO AM
8	DRAGONS LAIR	SOFTWARE PROJECTS	CO
9	COMMANDO	ELITE	SP CO AM BB EL C16
10	SECOND CITY	NOVAGEN	CO AT +4
11	BOMB JACK	ELITE	SP CO AT C16
12	WAY OF THE TIGER	GREMLIN GRAPHICS	SP CO AM MS
13	TAU CETI	CRL	SP CO AM
14	THEATRE EUROPE	PSS	SP CO AM AT
15	ELITE	ACORNSOFT	SP CO AM BB EL
16	CAULDRON II	PALACE	SP CO AM
17	MERCENARY	NOVAGEN	CO AT +4
18	BOBBY BEARING	THE EDGE	SP
19	THEY SOLD A MILLION II	HIT SQUAD	SP CO AM
20	SILENT SERVICE	MICROPROSE	CO AT

BUDGET TOP TEN

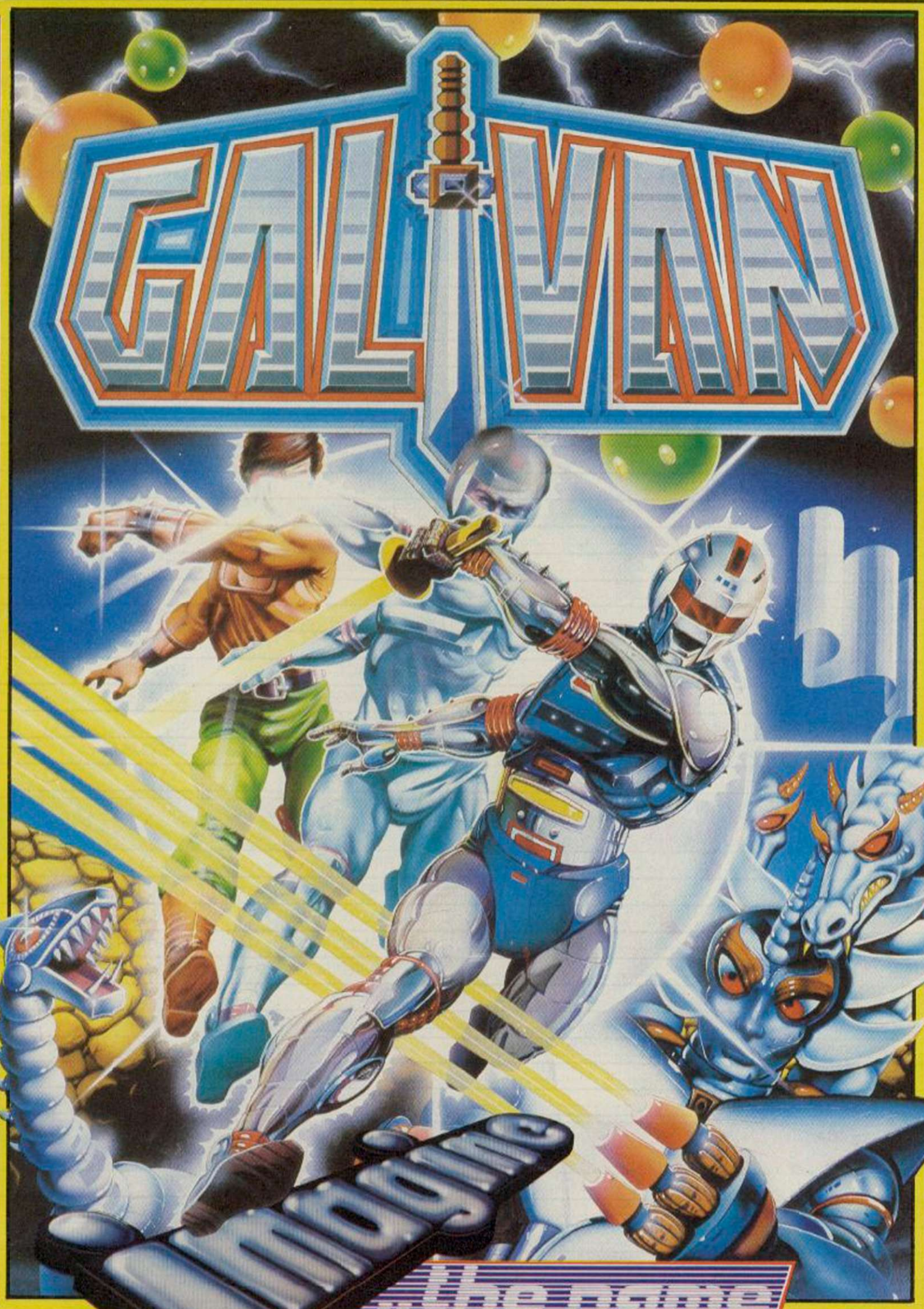
1	NINJA MASTER	FIREBIRD	SP CO
2	SPEED KING	MASTERTRONIC	CO C16
3	MOLECULE MAN	MASTERTRONIC	SP AM MS
4	KIKSTART	MASTERTRONIC	CO AT C16
5	FORMULA ONE RACING	MASTERTRONIC	SP CO AM MS AT C16
6	THRUST	FIREBIRD	CO BB
7	KNIGHT TYME	MASTERTRONIC	SP AM MS
8	ONE MAN AND HIS DROID	MASTERTRONIC	SP CO AM AT C16
9	KANE	MASTERTRONIC	CO AM
10	STREET OLYMICS	MASTERTRONIC	C16

BUBBLING UNDER

	REBLE STAR	FIREBIRD	SP
	FREAK FACTORY	FIREBIRD	CO
	TRAP ALLIGATA	ALLIGATA	SP CO V2
	FULL THROTTLE	2.99 CLASSICS	SP CO
	HI JACK	ELECTRIC DREAMS	SP AT
	PYRACURSE	HEWSON CONSULTANTS	SP
	COLLAPSE	FIREBIRD	AM AT
	RAGING BEAST	FIREBIRD	CO
	KING SIZE	ROBTEK	C16

MACHINE CODES:
SP = SPECTRUM; CO = COMMODORE; AM = AMSTRAD; MS = MSX; AT = ATARI; V2 = VIC20

A MISSION YOU CAN NEVER COMPLETE?



IMAGINE
the name of the game

SPECTRUM
£7.95
SPECTRUM

AMSTRAD
£8.95
COMMODORE 64

Imagine Software (1984) Limited
6 Central Street · Manchester M2 5NS
Tel:061 834 3939 · Telex: 669977

The ultimate in communications for the Spectrum range from Modem House

Modem House claims that its VTX 711 interface is the ultimate development in communications for the 48 and 128K Spectrum computers. Fully-compatible with the Voyager series of modems, the interface has many exciting features including auto-dial, answer and log-on as standard, eight macros and a screen dump facility.

When combined with the recommended Voyager 7 modem, the interface will turn a Spectrum computer into a low-cost, full-function communications workstation with many features of more expensive packages incorporated as standard. Three separate software packages are supplied on cassette with facilities to transfer to disc or Microdrive. One package is designed as a full-function Prestel viewdata emulator; another is a bulletin board/electronic mail system; and the final package is a telesoftware downloader system with Prestel emulation. The VTX 711 pack costs £39.95 excluding VAT.

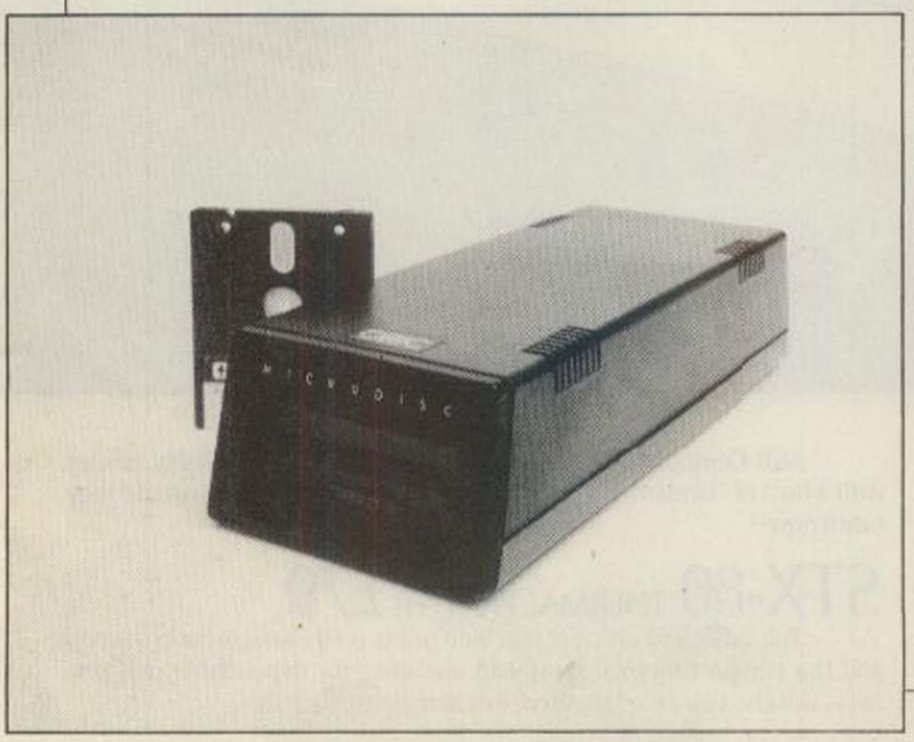
Modem House is also producing a complete package for Amstrad CPC owners. With auto-answer and auto-dial as standard and many other features claimed to do justice to the capability of CPC computers, the package is supplied as an interface with software on ROM written specially for the Voyager series modems. The entire package is available for £119.90 excluding VAT.

From tape to disc the Mirage way

Mirage Microcomputers Ltd has launched the Mirage Imager, a tape-to-disc transfer device for computers in the Amstrad CPC range. The Imager connects to the computer expansion port and, at the touch of a button, screen prompts appear allowing the user to save or load programs.

It also enables you to freeze any game at any point, save it, and then restore it later. A useful tool for multi-screen arcade or adventure game addicts, though at £49.95 its practical value for this purpose is a little suspect.

The manufacturer is confident that the Imager will not encourage copying or pirating of games. It has to be present during the saving and loading of any program, the files being unreadable unless the Imager is present.



Compufilter – protection from mains spikes

For those living in areas of high electrical interference, a recent addition to the Centronics Power Protection Package could form one solution. The Compufilter has been designed primarily to filter the powerline noise, RF interference and voltage spikes which often affect the performance of micro-computers and their allied systems.

The two models comprise a series of filters designed to eliminate both incoming and outgoing interference, by providing a high level of attenuation. The two- and four-socket models cost £19.95 and £29.95 respectively and are supplied with 1.5 metres of mains lead and a fitted plug.

Bargains galore for Oric owners

WE Software, a Worcestershire-based company recently linked with Eureka Informatique/Oric Products International and, for a limited period, is offering several Oric peripherals at reduced prices. The Eureka/Oric 3in. disc drive, complete with Sedoric, an advanced double-density disc operating system, is now available for £239.65, a reduction of £30.

Other items in the sale include the Oric V23 modem, complete with interface and software, a Cosmos printer and programmable joystick interface. Many popular Oric software titles are also available at reduced prices. The offer ends in mid-September.

Tandy reduces the price of its PC clones

It would seem that fear of competition from the long-awaited Amstrad PC clone is driving many companies to produce their own machines at lower cost. Tandy is reducing the price of certain models in its IBM PC-compatible 1000 range by up to £200. Prices now begin at £795 for a 256K, twin-disc drive machine with a mono monitor and rise to £2,195 for a 640K machine with a 20MB hard disc and colour monitor.

Both machines are capable of running a variety of MS-DOS programs, including *Lotus 1-2-3*, *dBase II* and *DR Graph*. Deskmate software is included. This is a package featuring word processing, spreadsheet and communications programs.

Saga keyboards – the last word in word-processing

Sinclair Spectrum owners, frustrated with those rubber keys on the earlier models of even the claimed professional keyboard on the Plus and 128K versions, may be interested in the latest product from Saga Systems Ltd.

The 2001 keyboard is suitable for all models in the Spectrum range, features an infra-red link between computer and keyboard and dedicated microprocessor control. The keyboard transmits to a receiving interface connected to the computer, which is also able to re-charge the board for a minimum of 72 hours' use. With such a good specification it is little wonder that the 2001 costs slightly less than £120 but it is supplied with *The Last Word*, an advanced word processing package which should ensure that the keyboard is put to good use.

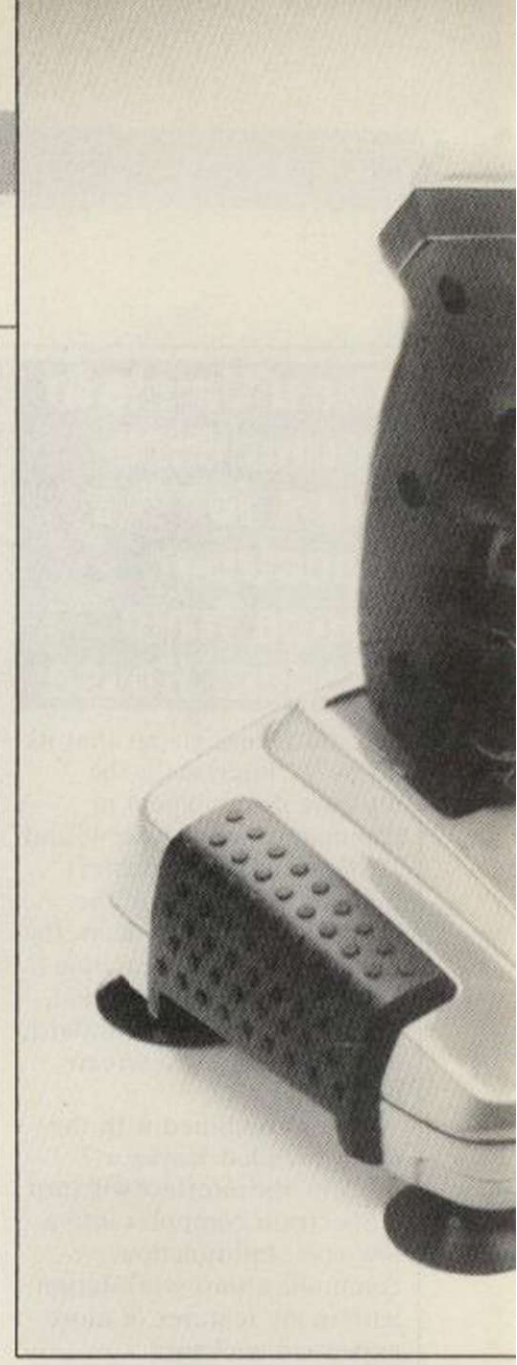
A professional peripheral for the devoted games fan

Euromax has launched a new range of high-quality joysticks, most using short travel microswitches for maximum sensitivity. One of the top models in the range is the Professional A. Aimed at the sophisticated games player, the handgrip follows the same styling as the successful Pro Ace joystick.

With two ultra-sensitive fire buttons, one on either side of the base, even the most ambidextrous shoot-'em-up fanatic can blast away to their heart's content. If, however, your fingers should become tired, a small switch located near the rear of the stick puts it into auto-fire mode. Costing £16.95, the Euromax Professional A is an ideal weapon for dedicated games players.

The turbocharged Quickshot 2 – primed and ready for action

Spectravideo has recently announced the release of an improved version of the popular Quickshot 2 joystick. Aimed at frantic shoot-'em-up game fans, the Quickshot 2 Turbo uses directional microswitches claimed to give a faster response and greater sensitivity and has thumb and finger trigger buttons.



We're standing printer

PowerType DAISYWHEEL PRINTER £229

With over 100 type fonts on widely available daisywheels and using standard ribbon cassettes, PowerType is remarkably cost efficient. A wide carriage giving up to 165 columns of beautiful print in the typeface of your choice, even a graphics capability, the flexibility of reverse paper feed and 18 characters per second means swift, classic correspondence. PowerType comes with Parallel and Serial interfaces as standard.

A&B Computing said in July that Powertype was a quality printer with a host of standard features, excellent value at £400 – How would they rate it now?!

STX-80 THERMAL PRINTER £79

This quiet and efficient machine prints at 60 characters per second and the compact thermal printhead, designed for dependable performance, will give you a lifetime service of 20 million characters.

Star Micronics U.K. Ltd. Craven House, 40 Uxbridge Road, Ealing, London W5 2BS. Telephone: 01-840 1800. A division of Star Micronics Co., Ltd., Japan.

Eureka – the latest from Watford Electronics

Watford Electronics, one of the leading suppliers to the BBC micro market, has unveiled a new product called the Eureka card. On certain programs, the new RAM expansion card provides up to 14K more RAM than a 6502 second processor and costs considerably less.

Controlled by software in a standard sideways ROM, the card fits into the processor socket of the BBC and gives two banks of sideways RAM, one write-protectable, with user-programmable socket numbers. A new set of Osword calls are provided with the card to allow blocks of extra RAM to be written to and read from directly.

Automatic shoot-'em-up from Britannia

Britannia Software is producing a battery-powered joystick auto-fire adaptor which provides any standard nine-pin joystick with an auto-fire facility. The unit has a male and female nine-pin connector. The male end fits in the computer game port, while the joystick lead plugs into the female connector. Then, when the fire button is held down, the joystick autofires.

Costing £5.95, it is a useful tool for providing your favourite joystick with auto-fire but with so many manufacturers producing cheap models with auto-fire as standard, its appeal is likely to be fairly limited.

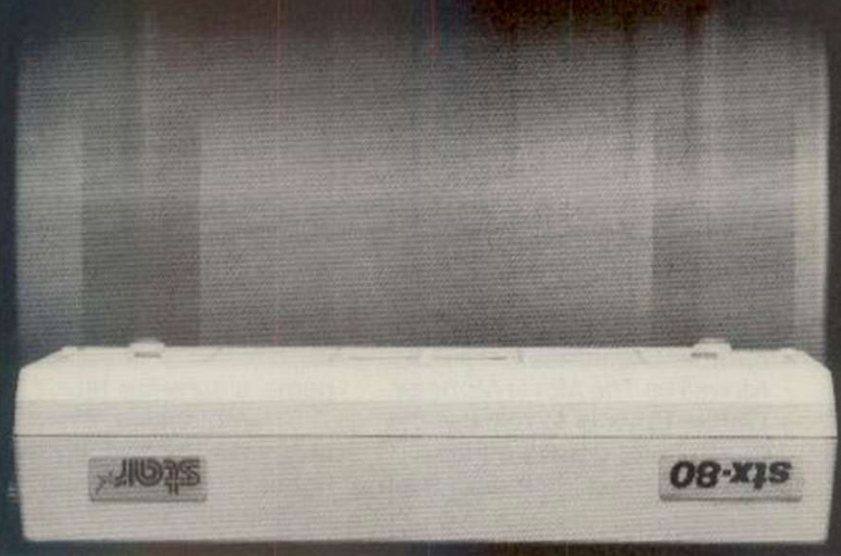
Textproc is another Britannia product but one which is likely to have greater appeal. It is a word processor for the Amstrad CPC range of computers available on cassette, disc or cartridge. The latter version must be used with the Britannia Romplus cartridge but is a very convenient format for the occasional user. Textproc allows for full editing of documents and text can be saved to tape or disc. Textproc costs £15.95, £17.95 and £21.95 for cassette, disc and cartridge versions respectively.

Einstein again

Tatung (U.K.) will be launching its new Einstein 256 at the PCW Show. This new microcomputer comprises two units: a CPU with a QWERTY style typing area and a 14in. colour monitor.

It will have 256K RAM, 512 colours and stereophonic sound. Based on a Z-80 processor, it will also be CP/M compatible and will run all existing Einstein software. The unit is priced at £400.

prices on their heads.



The STX-80 has a carriage width of 80 columns, graphics and many of the features of much larger printers. It's so quiet, the only thing that will make you shout is the price!

PowerType and STX are part of a range of exceptional quality printers – With prices this good you'll go head over heels for a STAR!

Ring – 0272 217777
for more information
(24 hour manned switchboard).

star

For more information and the address of your local dealer complete the coupon and send it to Star Micronics U.K. Ltd. Craven House, 40 Uxbridge Road, London W5 2BS.

Name _____

Address _____

YC0986

GAUNTLET

For U.S. Gold, 1986 has been relatively slow. Although it probably sold more software than many other software houses combined, it has failed to dominate the market. That is set to change between now and Christmas.

Obtaining licences for famous products has become so common that there are not many unlicensed products

He-Man

remaining. Toys, books, films – almost everything can and has been licensed. In an unexpected move, U.S. Gold is to release two games based on *He-Man* and the *Masters of the Universe,* a popular children's toy and cartoon series. Apparently the license was obtained almost two years ago but only now was the market thought to be ready.

To be programmed by Adventuresoft, there will be both an adventure and an arcade game, pitting He-Man against the evil Skeletor. Both games will include many of the original characters such as Battle Cat, Orko and Man-at-Arms.

However successful Masters of the Universe will be, it cannot hope to compete with the arcade licence of the year. Elite may have had *Ghosts and Goblins* but U.S. Gold has *Gauntlet.*

One of the biggest-selling arcade games of all time, Gauntlet promises to be the biggest smash for home micros since *Ghostbusters.*

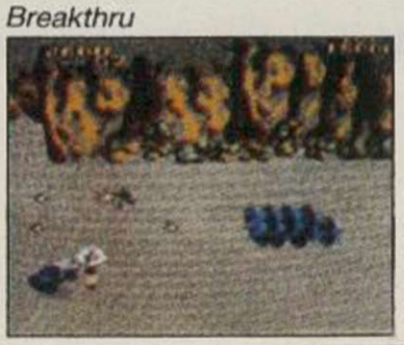
Express Raider

To be programmed by Gremlin Graphics, Gauntlet for the home micro will be only a two-player game, although you can choose between any of the four characters – Thyra, Thor, Merlin and Questor. To be released in November, across a range of computers, Gauntlet should be the game to watch at Christmas.

Undoubtedly the key to U.S. Gold success is the quantity as well as quality of its software and the latest releases promise to maintain that. Having signed a deal with Vortex, the software house behind such hits as *TLL* is to manufacture, promote and market its new titles, including the much-vaunted *Revolution.*

Epyx, too, plans for a bumper Christmas in the U.K. As well as *The Movie Monster Game,* Epyx is to release the fourth in its games series, *World Games.* Including such events as high diving from Acapulco and barrel jumping from Germany, it looks to be just as good as its popular predecessors.

Breakthru



Fans of the arcade game *Hang-On* will be pleased to hear about *Super Cycle,* a *Pole Position* with motorcycles which manages to capture all the excitement of the arcades. Excellent graphics, realistic sounds and novel racing will make the

Championship Wrestling

game a sure-fire hit.

Championship Wrestling promises to clean up the fighting games market, with realistic movements and some novel visual effects. There are eight characters who you must fight, as well as the crowd, who hurl abuse from all directions.

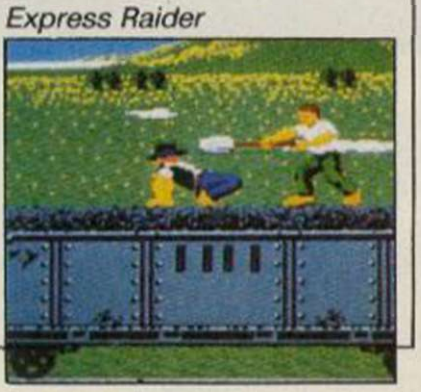
Continuing the trend for arcade conversions, U.S. Gold has managed to license three top arcade games, all of which could well make it to the top of the charts. Shoot-'em-up fans will be pleased to see that *Xevious,* the popular Namcos arcade game, is soon to be available for computers, with all the blasting fun retained.

Data East, the company which gave U.S. Gold the rights to *Kung-Fu Master,* has provided two more potential hits, *Breakthru* and *Express Raider.* Breakthru is a five-section, horizontally-scrolling Commando-type game, except that you control a car rather than a soldier. Trying to stop you are tanks, helicopters, jeeps and a variety of other hazards. If it is converted well, it could repeat the success *Commando* and *Rambo* achieved.

Express Raider is a train game with a difference. Set in the good old west, you must hi-jack a steam train before it reaches the station. The smooth scrolling and large characters will be difficult to convert but, if achieved, the result could be spectacular.

Last, but definitely not least, is Chris Gray's *Infiltrator.* Taking the U.S. by storm, it provides something for everyone with arcade, strategy and flight simulation all built-in. Using all his skill for designing games – and he was responsible for *Boulderdash,* one of the most playable games of all time – Gray has created a masterpiece, which will be reviewed fully next month.

Express Raider



Crockett and Tubbs

Ocean software, producer of such smashes as *Hunchback*, has released two new games for the Commodore 64, both of which are set to take the games market by storm, one way or another.

The first, *Parallax*, is a true shoot-'em-up, only with subtle differences. No longer is the only objective to cremate everything which moves. In Parallax a great deal of thought is necessary before it is possible even to approach completion.

Graphically, Parallax bears an obvious resemblance to Andrew Braybrook's monster hit *Uridium* but when you start playing it becomes apparent there is a great deal more gameplay. Using mettalix graphics and clever shadow effects, you can fly both above and below the ground.

However pretty Parallax is, it is Martin Galway's soundtrack which makes the game and he is without doubt the most talented musician on the Commodore 64. Another soundtrack he has produced recently is for another of the new Ocean games, *Miami Vice.*

Based on the popular television series, the games lets anyone adopt the role of Crockett and Tubs and try to stop the ever-increasing drugs problem. As with the series, most of the time is spent cruising round the streets of Miami, with the odd interlude to kill a few smugglers.

Again, the graphics are good and the soundtrack is superb, with an immaculate representation of the theme tune. Both games will be reviewed in next month's issue and should be available from the beginning of September.

Fairlight Hits the PCW

In a move obviously intended to fight head-on with *Batman* from Ocean, The Edge has released its own three-dimensional arcade adventure, *Fairlight*. Released originally for the Spectrum, it has excellent graphics and some devilish puzzles.

Although similar visually to Batman, Fairlight is much more of an adventurers' arcade game, with much more thought required rather than pure manual dexterity. Costing £14.95, Fairlight is available now.

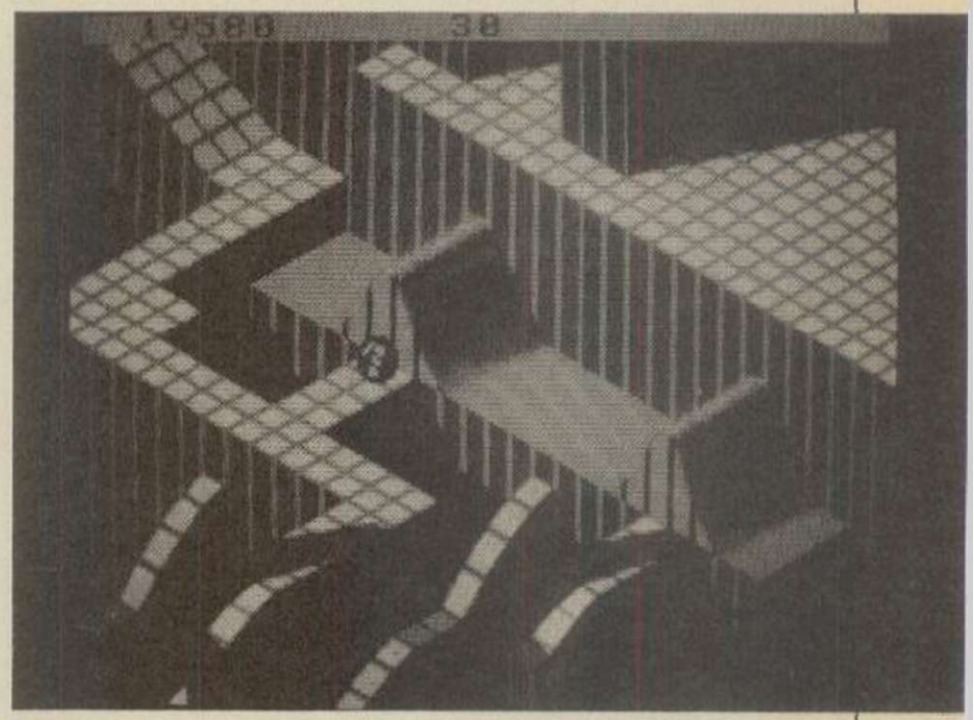
Electric Dreams of XARQ

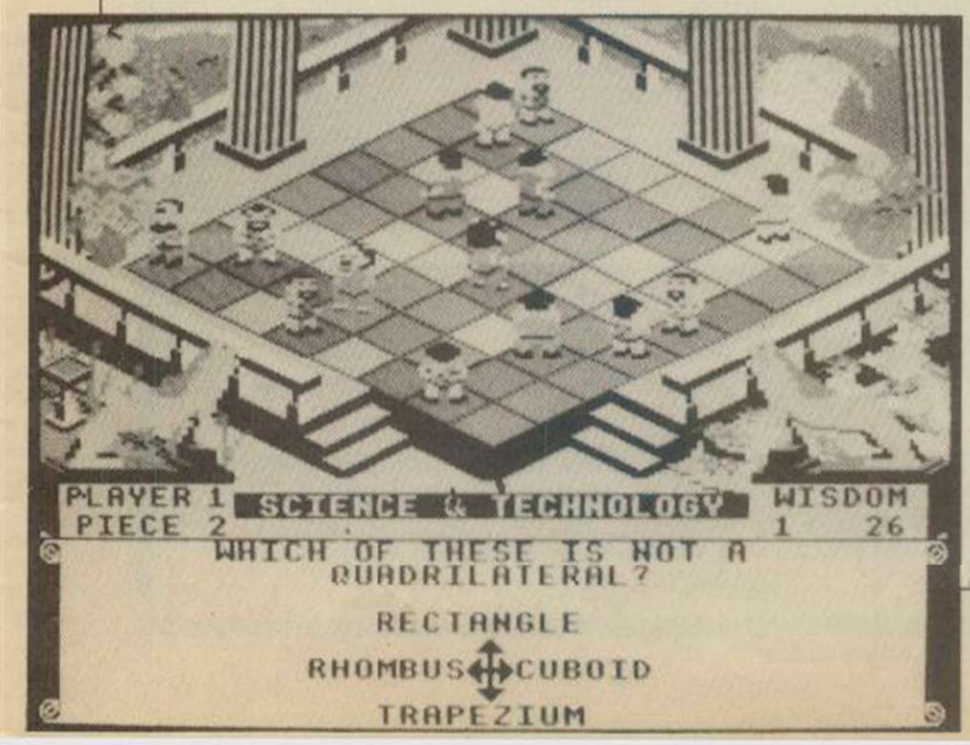
Activision owner Electric Dreams has just released its latest game. Called *Xarq* and programmed by Nick Cook, it promises to provide many hours of enjoyment for all gamers seeking a challenge. Costing £9.99 and available for the Spectrum 48/128K, it will be reviewed in full next month.

Complete madness

Fans of the brilliant arcade machine *Marble Madness* will be happy to hear that it will soon be available for the Commodore 64. If you own an Amiga, however, you will be able to buy the game immediately, courtesy of Ariolasoft. Costing £29.99 for the Amiga, it is as close as anyone will ever get, right down to the music and animation. Control is via the mouse, although on the 64 it will be using the joystick.

For release in early September, it is set to be an essential part of any arcade player's collection, and priced at around £10 it is considerably cheaper than the £2,000 arcade machine.





By the grace of God

Trivial Pursuit fanatics who can wait no longer for the Domark official version will be pleased to hear that Arcana Software has released *Powerplay*. Released originally for the BBC but now available for the Commodore 64 and Amstrad, it allows four players to take the roles of Gods and to battle for victory.

With more than 2,000 questions and the ability to create your own, together with sound and three-dimensional graphics in various arcade sections, it should appeal to all the family.

The additional temptation of a holiday in Greece for two lucky owners might help, too.

THOUGHTS & CROSSES

(COMPUTERS) LTD.

33 MARKET STREET, HECKMONDWIKE, WEST YORKS

COMPUTERS

Amstrad CPC464 (green) + £100 FREE software	£199
Amstrad CPC464 (colour monitor) + £100 FREE software	£299
Amstrad CPC6128 (Col & disk drive)	£399
Amstrad CPC6128 (Green & disk drive)	£299
Amstrad PCW8256	£458
Amstrad PCW8512	£573
Atari 520STM inc ½MB Drive & Mono Monitor	£620
Atari 1040ST inc 1MB Drive & Mono Monitor	£875
BBC Master 128	£499
CBM 128 inc Free Software	£225
CBM 128D	£489
Commodore 64 (New Style)	£150
Sinclair QL	£149
ZX Spectrum+ & Free Software	£109
ZX Spectrum 128	£139

PRINTERS

* = Near Letter Quality

*Amstrad DMP-2000	£159
*Canon PW1080A	£285
*Canon PW1156A	£395
*Citizen 120D (while stocks last)	£165
*Epson GX80	£295
*Epson LX80	£200
*Epson FX85	£425
*Juki 5510 (while stocks last)	£285
*Juki 5520 Colour	£425
*Mannesman MT80+	£175
*Mannesman MT85	£335
Panasonic	£169
Samleco DX85	£190
Shinwa CPA80	£179
*Citizen MPS10	£325
*Citizen MPS15	£395

DAISY WHEEL PRINTERS

Brother HR15	£375
Quen Data 1120	£189
Juki 6100	£320
Juki 6200	£549
Juki 2200 printer/typewriter	£239

PRINTER ACCESSORIES

Brother EP44 AC adaptor	£17
Brother M1009 Tractor unit	£27
Brother HR5 AC adaptor	£17
Brother CF50 (HR15) Sheet Feeder	£220
Quen Data 1120 Tractor	£110
Epson LX80 Tractor unit	£22
Epson LX80 Sheet Feeder	£60
Juki 6100/6200 Tractor Feeder	£129
Juki 6100/6200 Sheet Feeder	£220
T Switch	£75

PRINTWHEELS

Qume Single Plastic	£6
Juki (TA) Single Plastic	£8
Juki (TA) Double Plasic	£14
Brother Double Plastic	£20

PRINTER INTERFACES INTERNAL RS232 TYPE

Canon PW1080/1156A	£85
Citizen 120D RS232	£49
Citizen MPS 10/15	£35
Epson without Buffer (Phone)	£32
Epson 2K Buffer (Phone)	£72
Juki 6100	£60
Mannesman MT80 with 2K Buffer	£45
Mannesman Tally MT80+	£38
Shinwa CP (A) 80 & 2K Buffer	£60

EXTERNAL CENTRONICS TYPE

Kempston Interface-E Rom based for Spectrum	£39.95
Kempston Interface-S cass. for Spectrum	£29.95
QL Centronics interface	£30
IEEE to Centronics for CBM 4032/8096	£70
Turbo Print GT-Atari 800 etc.	£75
Ibek CBM64/+4	£60
Tripler 20/64 for CBM Vic20/64	£50
Printerface centronics <> RS232 converter & 2K buffer	£85
Electron First Byte Centronics	£19.95

PRINTER RIBBONS

Amstrad DMP 2000	£5.00
Amstrad PCW 8256	£5.50
Anadex 9500	£9
Brother EM1/EM2/HR1 SS	£2
Brother EM1/EM2/HR1 MS	£5
Brother EP44	£2.30
Brother HR5	£2.99
Brother M1009/DM5	£3.80
Brother HR15/25/35 SS	£4
Brother HR15/25/35 CO	£3
Brother HR15/25/35 MS	£6
Canon PW1080A/PW1156A/Kaga Taxan KP810/KP910	£5
CBM MPS 801	£6.50
CBM MPS 803	£3.80
CBM 1525	£4.50
Centronics Horizon H80/H156	£5
Epson GX/LX80	£4.50
Epson MX/FX/RX 80	£4
Epson MX/FX/RX100	£8
Juki 5510	£4
Juki 6100 Singlestrike	£2
Juki 6100 Multistrike	£5
Juki 2200 Correctable	£4
Juki 2200 Multistrike	£4
Mannesman Tally MT80+	£6
Mannesman Tally MT85	£6.50
Memotech DMX80	£9
NEC 8023	£7
Oki Microline 80	£2.30
Panasonic KX-P1091	£9
Qume Multistrike	£4.30
Qume nylon	£6.50
Riteman A1	£7
Samleco DX85/86	£9.50
Seikosha GP80	£4.50
Seikosha GP100	£4.50
Shinwa CP80/CPA80/SP80	£6
Star Gemini 10	£2.30

10 or more ribbons deduct 10%
Others available, please ask

LEADS

Discovery to Centronics	£15
ACT Apricot/Sirus Centronics Printer	£15
Amstrad Centronics Printer	£10
Atari 520ST Printer	£15
BBC Centronics Printer	£10
BBC Microvitec RGB Monitor	£5.95
BBC Serial RS232 Printer	£10
Commodore Serial IEEE	£5.95
Dragon Centronics Printer	£10
Einstein Centronics Printer	£10
Electron +1 Printer	£10
IBM Centronics Printer Lead (cable)	£19
Memotech Centronics Printer	£10
MSX Centronics Printer	£15
Oric Centronics Printer	£10
QL to RS232 25 'D'	£14.95
Watadrive Centronics	£15
ZX Interface 1 RS232	£14.95
RS232 25 'D'	£20

PRINTER PAPER

1000 Sheets of continuous tractor feed paper	£9
4000 Sheets of continuous tractor feed paper	£26
1000 Single or Double tractor feed labels	£6.50
5000 Single or Double tractor feed labels	£26

MONITORS

Commodore 1901	£289
Ferguson mono inc lead (please state which computer)	£82
Ferguson TX RGB	£230
Microvitec 1431 MS (Standard res.)	£215
Microvitec 1451 MS (Medium res.)	£290
Microvitec 1431 MZ	£245
Microvitec DQ1451 (QL)	£275
Microvitec 1431 AP (Standard res. RGB/TTL)	£235
Microvitec 1451 AP MS4 (Medium res. RGB/TTL)	£345
Philips 7502 anti-glare green screen monitor (20MHz)	£82
Philips 7513 anti-glare green screen monitor (IBM)	£115
Philips 7522 anti-glare amber screen monitor (20MHz)	£95
Philips 7542 anti-glare white screen monitor (20MHz)	£95
Philips 8533 RGB/TTL/Audio M,edium res. colour	£290

DISKETTES

Parrot, 3M, Control Data

S/S D/D 40T 10 for	£14
S/S D/D 40T 10 for	£16
S/S D/D 80T 10 for	£20

Parrot diskettes include FREE library case
(3 Boxes or more less 10%)

DYSAN DISKETTES

104/1D S/S D/D 40T 10 for	£18
104/2D D/S D/D 40T 10 for	£26
204/2D D/S D/D 80T 10 for	£30

(3 Boxes or more less 10%)

COMPACT DISKETTES

3" Amsoft 8512 Diskettes	each £6.50
3" Amsoft 8512 Diskettes	10 for £60
3" Amsoft diskettes	£4.50
3" Amsoft diskettes	10 for £40
3.5" Single sided	each £3.20
3.5" Single sided	10 for £28
3.5" Double sided	each £4
3.5" Double sided	10 for £36

PVC COVERS

Acorn Electron	£2.99
Amstrad Colour Monitor	£4.80
Amstrad CPC464	£3.99
Amstrad CPC6128	£3.99
Amstrad Green Monitor	£4.80
Amstrad PCW 8256	£10
Atari 520ST/SM1244/SF354	£10
BBC Master	£4.50
BBC A/B B+	£3.99
Brother HR15	£5.60
Brother M1009	£4.30
Cannon PW1080A/KAGA 810	£4.80
Cannon PW1156A/KAGA 910	£6.50
CBM 16/20/64	£2.99
CBM 128	£3.99
CBM MPS 801	£4.30
Citizen 12D	£4.80
Epson FX80	£4.80
Epson LX/GX80	£4.80
Epson RX80F/T	£4.80
Epson FX80	£4.80
Juki 6100	£5.60
Mannesman Tally MT80(+)	£4.80
Momotech MTX 500/512	£3.99
Microvitec M-14"	£4.80
Philips 7502/7522 etc.	£4.80
Saga Elite Keyboard	£4.80
Saga Emperor Keyboard	£4.50
Seikosha GP80	£3.50
Seikosha GP100	£3.75
Shinwa CP80	£4.30
Sinclair QL	£3.99
ZX Spectrum	£1.99
ZX Spectrum Plus	£2.99

DISK DRIVES

Atari SF314 Disk Drive 1Mb		£190
Atari SF354 Disk Drive .5Mb		£135
5401 100K 40T	Opus	£99.00
5401D 100K 40T + PSU	Opus	£129.00
5802 400K 40T/80T DS	Opus	£135.00
5802D 2x 400K 40/80T DS + PSU	Opus	£315.00
5802P 400K 40T/80T DS + PSU	Opus	£145.00
CD800 2x 400K 40/80T DS + PSU	Cumana	£329.00
Challenger 3 720K Disk +256K Ramdisk	Opus	£239.00
CS 100 100K 40T + PSU	Cumana	£129
CSX100 100K 40T	Cumana	£99.00
CS 400 400K 40/80T DS + PSU	Cumana	£169.00
CSX400 400K 40/80T DS	Cumana	£139.00

AMSTRAD PRODUCTS

Title	Company	
464/6128 AMS Mouse	AMS	£65.00
464/664/6128 Modulator MP-2	Amstrad	£29.00
464/6128 RS232 Interface	Amstrad	£49.00
464 Light Pen (Cass)	DKT	£15.00
464/6128 Light Pen (Rom)	DKT	£28.00
Superpower ROM Card		£34.95
PCW RS232/Centronics	Amstrad	£67.00
464 128K Upgrade	DK Tronics	£49.00
464 Soeech Synthesiser	DK Tronics	£35.00
6128 256K ramdisk	DK Tronics	£95.00
6128 256K upgrade	DK Tronics	£95.00
464/6128 Doubler	Evesham	£14.50
464/6126 Slomo	NVP	£14.00
Nightingale Modem	Pace	£99.00
Nightingale Modem/ Commstar/Lead/ RS232 Interface		£169.00
Amstrad DD-1 (Drive + interface)	Amstrad 464	£159.00
Amstrad FD-1 (Second drive)	Amstrad 464	£99.00
Amstrad FD-1L	Amstrad 664/6128	£109.00
PCW8256 FD2 (Fitted)		£180.00
Intergem	Gemini	£89.00

SPECTRUM PRODUCTS

Title	Company	
AMX Mouse	AMS	£65
Megasound	Cheetah	£9.95
Speedrum	Cheetah	£26
Microslot	Currah	£6.95
Microspeech	Currah	£20
DK Keyboard	DK Tronics	£29
Extension to Keyway	DK Tronics	£10
Microdrive Extension Lead	DK Tronics	£8
Interface 3	Evesham	£35
Furguason TX RGB Adaptor MA20		£44
Mouse + OCP Art Studio	Kempston	£69
Slomo	NVP	£14
Discovery 1	Opus	£115
Multiface 1	Romatic Robot	£39
Elite 3 Keyboard	Saga	£65
Emperor 1 Keyboard	Saga	£36
Pack of 4 Cartridges	Sinclair	£7.50
Microdrive Library Case	Transform	£5.95

COMPUTER SOFTWARE

Spectrum	Commodore 64/128
Amstrad 464/664/6128/8256	Electron
BBC	Memotech
QL	Macintosh
Apple II (e)	IBM

All our software is discounted by 10%
Please send for relavent software lists.

QL SOFTWARE

Cash Trader	Accounting Software	£62.95
Steve Davis Snooker	CDS	£13.50
Bridge Player II	CP	£16.95
Transact	Dialog	£31.50
Sprite Generator	Digital	£22.50
Super Backgammon	Digital	£14.40
Supercharge	Digital	£54.00
Superforth + Revers	Digital	£27.50
Super Astrologer	Digital	£22.50
Super Arcadia	Digital	£14.40
Monitor/Dissassembler	Digital	£17.95
Archiver	Eidersoft	£17.00
Archiver disk	Eidersoft	£22.50
Artice	Eidersoft	£11.65
BJ in 3D land	Eidersoft	£11.65
BJ the Return	Eidersoft	£9.80
Choice	Eidersoft	£13.50
Citadel	Eidersoft	£8.95
ICE	Eidersoft	£22.50
ICE Set	Eidersoft	£53.95
Impacct	Eidersoft	£160.00
Qdumps	Eidersoft	£8.95
Qspell	Eidersoft	£17.95
Aspell disk	Eidersoft	£22.50
Spook	Eidersoft	£9.80
Supercharge + Ice + Choice	Eidersoft	£80.95
Toolkit	Eidersoft	£8.95
Zapper/eagle	Eidersoft	£8.95
Hyperdrive	English	£13.50
Executive Adventure	Gemini	£11.65
Life & Business Organiser	Gemini	£17.95
QL Gardener	Gordian	£22.50
Assembler	GST	£35.95
QL Mon	Hisoft	£17.95
Scrabble	Leisure Genius	£13.50
Assembler	Metmacomo	£35.95
BCPL	Metmacomo	£53.95
QLC	Metmacomo	£80.95
Lisp	Metmacomo	£53.95
Pascal	Metmacomo	£80.95
Lands of Havoc	Microdeal	£17.95
QL Flight	Microdeal	£17.95
Knight Flight	Realtime	£13.50
Integrated Accounts	Sagesoft	£79.95
QL Bounder	Sinclair	£8.95
Cartridge Doctor	Talant	£13.50
Cosmos	Talent	£13.50
Graphicikl	Talent	£22.50
Technicl	Talent	£45.00
West	Talent	£13.50
Zeul	Talanet	£13.50
Tascopy	Taaman	£11.65
Tasprint	Taaman	£17.95
Decision Maker	Tryptych	£35.95R
Entregreneur	Tryptych	£35.95
Project Planner	Tryptych	£35.95
Mortville Manor	Pyramid	£17.95
QL Paintre	Pyramid	£14.35
Vroom	Pyramid	£14.35
Othello	Pyramid	£14.35
Nucleon	Pyramid	£17.95

PCW 8256 SOFTWARE

Prospell	Amor	£26.95
Combo: Stock, Invoicing, Sales	Amsoft	£103.49
Nominal Ledger	Amsoft	£41.39
Purchase Ledger	Amsoft	£41.39
Psl Accounts	Camsoft	£135.00
Brain Storm	Caxton	£45.00
Cardbox	Caxton	£90.00
Scratchpad Plus	Caxton	£62.95
Smart key	Caxton	£45.00
Touch 'n' Go	Caxton	£22.50
Accounts (Nom/Purch/Sales/Invs)	Compact	£179.95
Daybook	Compact	£45.00
Nominal Ledger	Compact	£62.95
Nucleus (2nd Drive Reqd.)	Compact	£89.95
Payroll (2nd Drive Reqd.)	Compact	£89.95
Purchase Ledger	Compact	£62.95
Sales & Invoicing	Compact	£62.95
Stock Control	Compact	£62.95
Bridge Player	CP	£17.95
Clock Chess 3D	CP Software	£14.95
Datafile	Datarun	£26.95
CBasic Compiler	Digital	£45.00
DR Draw	Digital	£45.00
DR Graph	Digital	£45.00
DR Pascal MT+	Digital	£45.00
Pascal MT/+	Digital	£45.00
dBase II	First	£107.00
Datagem	Gemini	£36.00
Intergem	Gemini	£90.00
C	Hisoft	£35.95
Devpac80	Hisoft	£35.95
Pascal80	Hisoft	£35.95
Deadline	Infocom	£20.00
Hitchhickers Guide To Galaxy	Infocom	£25.00
Planetfall	Infocom	£20.00
Seastalker	Infocom	£20.00
Zork I	Infocom	£20.00
Pocket Wordstar	Micropro	£45.00
Cracker	Newstar	£45.00
Delta	Newstar	£89.00
Accountant Plus	Sage	£135.00
Chit Chat	Sage	£63.00
Chit Chat Combo	Sage	£90.00
Invoicing	Sage	£63.00
Magic Filer	Sage	£63.00
Popular Accounts	Sage	£89.00
Popular Payroll	Sage	£89.00
Popular Accounts/Payroll	Sage	£135.00
Retrieve	Sage	£63.00
Supercombo	Sage	£180.00
Sandpiper Accounts	Sandpipar	£119.00
Supercalc 2	Scroim	£45.00
Tasword 8000	Tasman	£22.50
Tasdiary	Tasman	£11.90

SPECTRUM SOFTWARE

Title	Company	
Beta Basic 3.0	Betasoft	£13.50
Masterfile	Campbell	£13.50
Masterfile & MF Print	Campbell	£10.00
Astronomer II	CP Software	£8.95
Floating Point Forth	CP Software	£8.95
Supercode III	CP Software	£11.65
Mini Office	Database	£5.35
The Illustrator	Gilsoft	£13.50
The Quill	Gilsoft	£13.50
C Compiler	Hisoft	£22.50
Dev Pac 3	Hisoft	£12.50
Pascal	Hisoft	£22.50
Ultrakit	Hisoft	£8.50
Omniosic 2	Microphere	£13.50
Machine Code Tutor	New Generation	£13.50
Lightmaniac	New Generation	£13.50
Address Manager Standard	OCP	£8.05
Address Manager Plus 80	OCP	£17.95
Editor Assembler	OCP	£11.65
Finance Manager Standard	OCP	£8.05
Finance Manager Plus 80	OCP	£17.95
Machine Code Test Tool	OCP	£8.95
Stock Manager Plus 80	OCP	£17.95
VAT Manager Standard	OCP	£8.05
Small Business Accounts	Sinclair	£6.50
VU 3D	Sinclair	£4.50
The Writer (Cass)	Softek	£11.65
The Writer (MD)	Softek	£14.84
The Artist	Softek	£11.65
Tascopy	Tasman	£8.90
Tasmerge	Tasman	£9.80
Tasprint	Tasman	£8.90
Taswide	Tasman	£4.95
Tasword II	Tasman	£12.50

ATARI 520ST SOFTWARE

Title	Company	
Music Studio	Activision	£26.95
D.E.G.A.S.	Batteries Included	£35.95
Sundong	Frozen Legacy	£26.95
Haba Dex	Haba	£35.95
Haba Spell	Haba	£35.95
Haba Merge	Haba	£35.95
Haba View	Haba	£87.95
Hippo C	Haba	£
Deadline	Infocom	£21.00
Hitchhikers Guide	Infocom	£28.00
Planetfall	Infocom	£21.00
Seastalker	Infocom	£21.00
Sorceror	Infocom	£21.70
Spellbreaker	Infocom	£25.20
Starcross	Infocom	£21.70
Suspended	Infocom	£21.70
Wishbringer	Infocom	£26.10
Zork 1	Infocom	£21.00
K Seka	Kuma	£45.00
K Spread	Kuma	£45.00
Laserbase	Laser Software	£89.00
Colourspace	Llamasoft	£17.95
Assembler	Metacomco	£45.00
Lattice C	Metacomco	£90.00
Pascal	Metacomco	£81.00
BBS	Microdeal	£26.95
Calendar	Microdeal	£17.95
Cornerman	Microdeal	£26.95
Disk Help	Microdeal	£26.95
Direct File Transfer	Microdeal	£26.95
DOS-Shell	Microdeal	£26.95
Flip Side	Microdeal	£17.95
Kasad	Microdeal	£26.95
Lands Of Havoc	Microdeal	£17.95
M-Disk	Microdeal	£11.65
M-Copy	Microdeal	£45.00
Major Motion	Microdeal	£22.50
Mudpies	Microdeal	£17.95
Soft Spool/M-Disk	Microdeal	£17.95
Time Bandit	Microdeal	£26.95
Utilities	Microdeal	£35.95
Bratacas	Psygnosis	£31.50
The Pawn	Rainbird	£22.50
Rhythm	Softechnics	£35.95
Timelink	Softechnics	£80.95
Zeus/West Twin Adventure	Talent	£22.50
VIP Professional	VIP Technologies	£175.00

Tel: (0924) 409753 for ACCESS VISA AMERICAN EXPRESS

Government, Local Authority, Educational enquiries sought.
Special B.F.P.O. Rates.

ALL PRICES INCLUDE VAT AND CARRIAGE

EXPORT ORDERS WELCOME
ASK OR SEND FOR PRICE LIST

Tel: (0924) 402337 for General Enquiries.
Telex: 556577 CROSS G

Shop open 9-5pm Mon-Sat; Mail Order 9-8pm Mon-Sat.
You can phone up to 8pm and speak to a real voice.

Amiga – a powerful editing terminal

The Commodore wonder micro, the Amiga, is the ambitious choice of main viewdata editing terminal to be used in conjunction with the new Micronet in-house viewdata database computer, a Unix running DEC MicroVax 2.

At first it is not easy to see the logic of choosing such a glamorous micro for the somewhat specialised task of editing a viewdata database but, with the help of a new comms package from Watford-based Y2 Computing, the Amiga suddenly became the only choice over more established alternatives. Viewdata editing terminals are not exactly high-volume sellers because of their specialised nature and it was found that the very expensive few on offer could not cope with the required 9,600 baud link with the Vax.

everything required of a specialised editing keyboard can be accomplished via mouse through the Y2 software. The multi-tasking prospects of having word-processed text in one window and a Prestel editing screen on another simultaneously-visible screen is a prospective reality, making the Amiga an even more logical choice.

London-based Brainstorm Computers will be supplying the software heart to the new Micronet £100,000 Vax system, with a specially-written and customised viewdata front-end to the Unix operating system. Along with the 12 Amiga terminals for journalists to use, there will be direct update links with Prestel computers and eventually a Gateway link for forthcoming specialised Micronet services.

Free Prism modems from Prestel

From the beginning July, Micronet has been giving new subscribers to its Prestel database the option of claiming a free modem as part of the subscription. Micronet has around 10,000 Prism 2000 and VTX5000 modems to give away as part of its marketing drive.

While rumours continue to circulate of a large-scale subsidised modem program from BT and/or Prestel, it is encouraging to see at least one company lending its albeit relatively small weight to encourage microcomputer comms in the U.K.

Let us hope Micronet can set some kind of prececent for future efforts.

New features for Prestel

In the last year, Prestel has had its fair share of criticism for being inefficient and out-of-date because of its restrictive number-pad-orientated origins. Prestel has responded by announcing enhancements to the Prestel Mailbox service and the prospective introduction of keyword searching.

Prestel Mailboxes will be up to four times longer than they are at present, with a faster method of perusing incoming mail. Mailboxes will also be able to be read and dealt with in any order, rather than in turn as at present. It will be possible to forward incoming mail easily to other mailboxes and replies to incoming mail will be made easier by not having to re-type the recipient's MBX number.

It will be possible to store unfinished messages for later use and you will also be able to send the same message to several other recipients automatically by entering MBX numbers into a mailing list on-line.

Unfortunately the Mailbox improvements probably will not be implemented until next year but the keyword search system is scheduled for this autumn. The search facility will be limited to searching special indices. Therefore you might be able ti key *SPORT to obtain an index of sports features but you would not be able to type e.g., *Daley Thompson for occurrences of strings or names within articles.

Teletel opens its doors for French-speaking BBC computer owners

If you have a BBC micro, a limitless telephone bill budget and a working knowledge of French, you can access the French Teletel system from the U.K. Aldoda International has announced a ROM or disc-based Teletel-emulating terminal package for the BBC micro.

Teletel uses a non-standard, extended characters/colours display specification and the Aldoda package uses the BBC mode 1 graphics screen mode to emulate most Teletel functions.

More information can be obtained from Aldoda International, 201 Haverstock Hill, London NW3 Tel: 01-794 0991.

Observe the news on viewdata

It now looks as if Prestel will soon feature a daily international and national news service sourced from *The Observer*. It is understood that negotiations with *The Observer* to make use of reports already circulated daily via Telex and facsimile are at an advanced stage. At the time of writing, Prestel was unavailable for comment.

A new home for the Gnome

Despite nearly winding-up due to lack of finance earlier this year, the very popular and charismatic independent viewdata Bulletin Board, The Gnome at Home, is set to expand. Run by Glyn Phillips, who used to be one of the partners running SoftMachinery, the BBC-based comms software house, The Gnome at Home is an advanced multi-user-capable viewdata BB running on an Acorn Econet network.

TG&H is a very professional set-up, modelled on Prestel, and is several leagues ahead of traditional 300-baud single-user BBs which abound. Several telephone lines are installed to the north London-based TG&H, which can be accessed by dialling 01-888 8894. Recent financial realities have now forced a reluctant Phillips to charge an annual £18 subscription per user for access to the full range of features, though there are no time charges.

Versions of the much-honed TG&H host software are being offered for sale at £500 and £2,000.

The T-3100 – a Japan

Geoff Wheelwright looks at a portable PC-compatible from Toshiba. This extremely fast and powerful machine is expected to impress the business market.

While many dream machines are the products of individual fantasies about the ultimate games computer or the greatest business PC, there is one which seems to transcend everyone's individual preferences – the portable computer.

Alan Kay, creator of the Windows, Icons, Mouse and Pointer – WIMP – system, copied later by Apple and Atari – called his ultimate portable computer idea the Dynabook, while Sir Clive Sinclair thought the concept was so important he called it Pandora, after the Greek box of tricks which let loose man's infallibility.

There is something innately attractive about trying to fit all the power of a traditional business computer into something with a handle which can be carried. Until recently, however, the handle was dwarfed by the huge box beneath it.

All that has changed in the last 12 months with the release of machines such as the Toshiba T-3100 computer, the subject of this month's dream. Imagine a machine which uses the same computer processor as the powerful IBM AT, which this column encountered in the July issue, offers up to 2.6MB of internal RAM expansion, includes a gas plasma flat-screen CRT-style display, runs at 7.16Mhz – up to five times faster than the standard PC – and includes both a 10MB hard disc and a 720K 3.5in. floppy disc.

Imagine, as well, being able to afford a machine priced at more than £3,200. When you have done all the imagining, I will tell you what a real dream the machine was to use. Not only did it run all the important IBM PC software I could throw at it but it did so at high speed and with a display which could put many standard monochrome monitors to shame.

Hard disc

All that performance, however, is obtained at a price. Not only is the machine expensive but it does not run on batteries. The main reason for that is the hard disc; that kind of storage power would breathe the life out of two double-A cells within minutes of putting them into the machine. That is probably just as well, because the 3100 could not use its brilliant flat-screen display without the mains-provided power.

The need for mains power in no way detracts from the portability of the machine. At only 15lb. and with the otherwise-identical T-2100 PC-compatible twin-floppy version at less than 10lb. the T-3100 probably provides more power than you are likely to get anywhere else in such a small box. The sliding handle is built into the back of the machine and can either be extended for carrying or placed at 90 degrees to the machine to give a typing tilt.

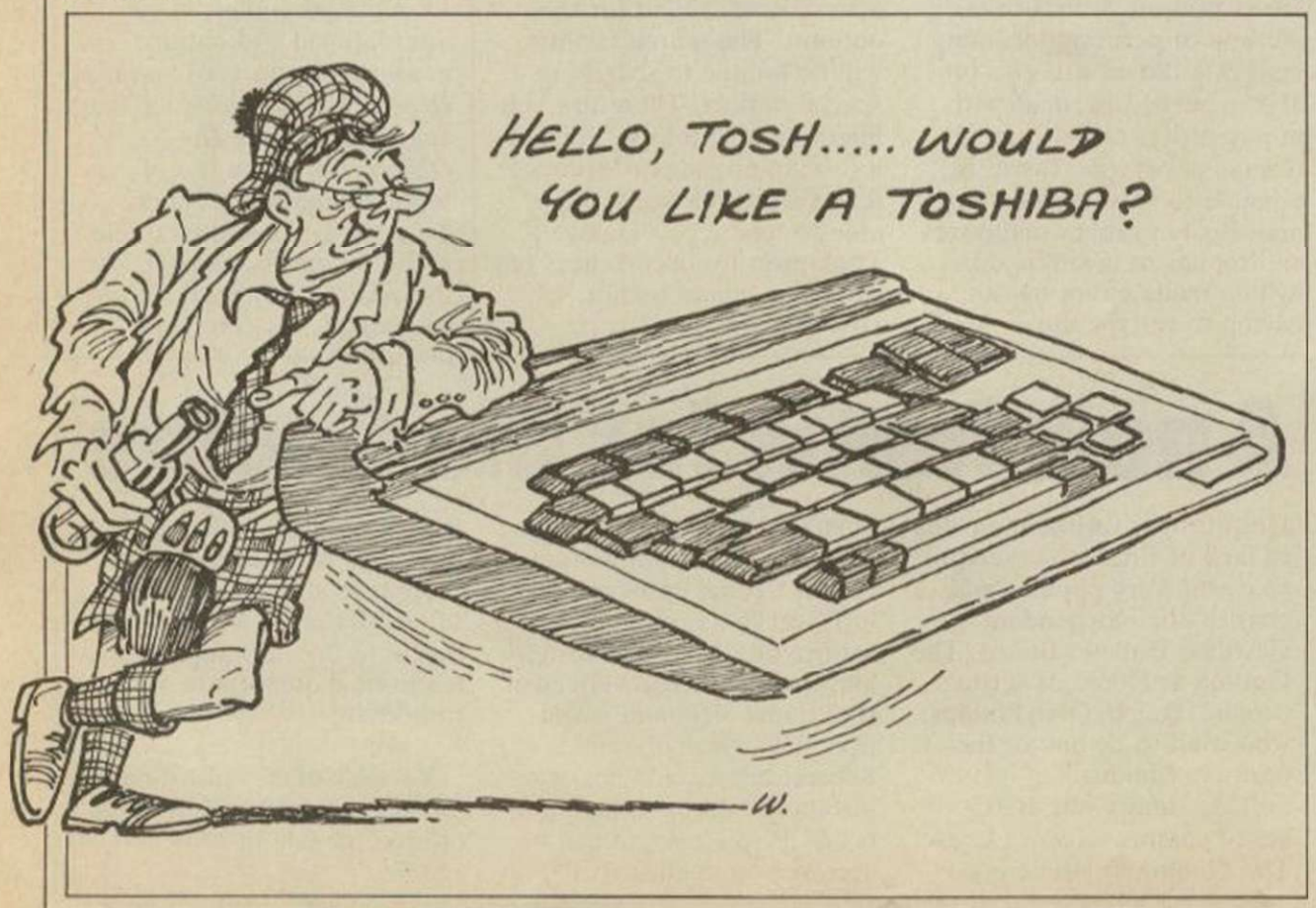
You will also find a large number of rather essential interfaces at the back of the machine as well. Parallel and serial ports are provided as standard, along with an RGB colour monitor output, clock/calendar and expansion port – for a box which allows you to use up to five IBM PC and AT expansion cards. The parallel port also doubles as an external 5.25in. disc drive connector, so you can install popular business applications on the hard disc.

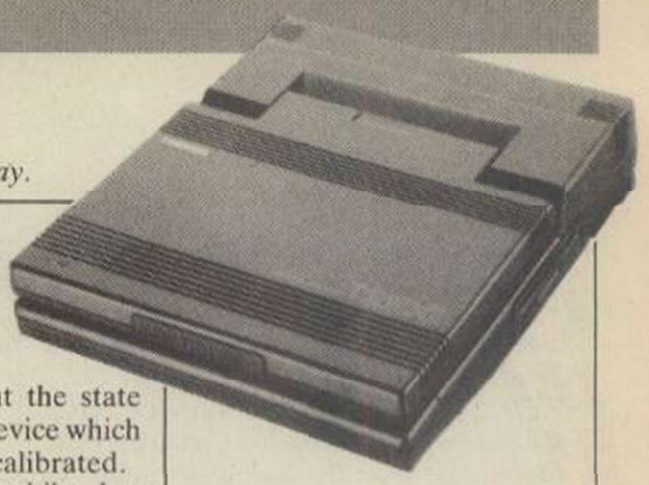
Disc format

The main thing I noticed about the T-3100 is just how many of the designer's dreams must have gone into making it. It is obvious from the reduced size of the keyboard that the width of it was of considerable importance. To keep that to a minimum, the traditional 10 IBM function keys have been moved along the top of the keyboard, with the numeric keypad functions doubled-up on keys in the right-hand section of the keyboard.

The only real difficulty which that reconfiguration may pose is in some business software applications, where the designers rely on keys being in a certain place. Given that the keys on the T-3100 are sufficiently close together it is not too difficult to effect many varying key combinations, so that should not be insurmountible.

The other great wish-fulfilment the T-3100 provides is in the way it handles disc formats. Not only will the T-3100 read its own 720K 3.5in. floppy discs but also regular 360K 5.25in. discs, using the external drive, and also 360K 3.5in. floppy discs written to MS-DOS format. That meant that I could use discs interchangably





Fold-away display.

ese take-away

between the T-3100, the Apricot XEN – featured as last month's Dream Machine – and the Atari 1040ST.

All those features, however, would be worthless were it not for the brilliant T-3100 screen display. The display, usually of the LCD type, has been the downfall of so many portables – the Apricot Portable and the Apple IIc to name two – that it was a genuine relief to switch on the T-3100 and see the bright, well-lit gas plasma display.

Pedigree portable

Gas plasma is not inexpensive. It is probably the single biggest cost factor in the machine, aside perhaps from the hard disc unit, and certainly represents the state of the art in flat screen display technology. It presents a brilliant resolution and is good enough to allow the T-3100 screen to emulate a colour monitor, so that most IBM PC software, whether it is configured for a colour or monochrome display, can be displayed effectively on the T-3100.

The one great fear which can turn many a portable computer dream into a nightmare is what happens if the machine is dropped. Aside from being very unpopular with Toshiba, you might think that dropping the machine would send gallons of glass plasma oozing all over the pavement. More important, you would certainly have a valid concern about the state of the hard disc, a device which needs to be finely-calibrated.

It seems that Toshiba has taken a few leaves from the Compaq book in developing the T-3100 and Toshiba says it has tested the hard disc to withstand up to a 70G force, which is a considerable degree of knocking about. That bodes well for the machine's portable pedigree. Far too many people forget that it is just as important for a machine to be able to withstand the rigours of being moved as it is to be small enough to do so.

Sweet dreams

One of my complaints about portable computers, and computers in general, is that they have never been tough enough to trust to the cargo hold of an aircraft. That always means that one has to take them as carry-on luggage, causing major disagreements about the amount of room there is likely to be beneath the seat and the weight restrictions of the overhead bins. The T-3100 solves the difficulty by being small enough to carry on to an aircraft but is tough enough to put in one's luggage.

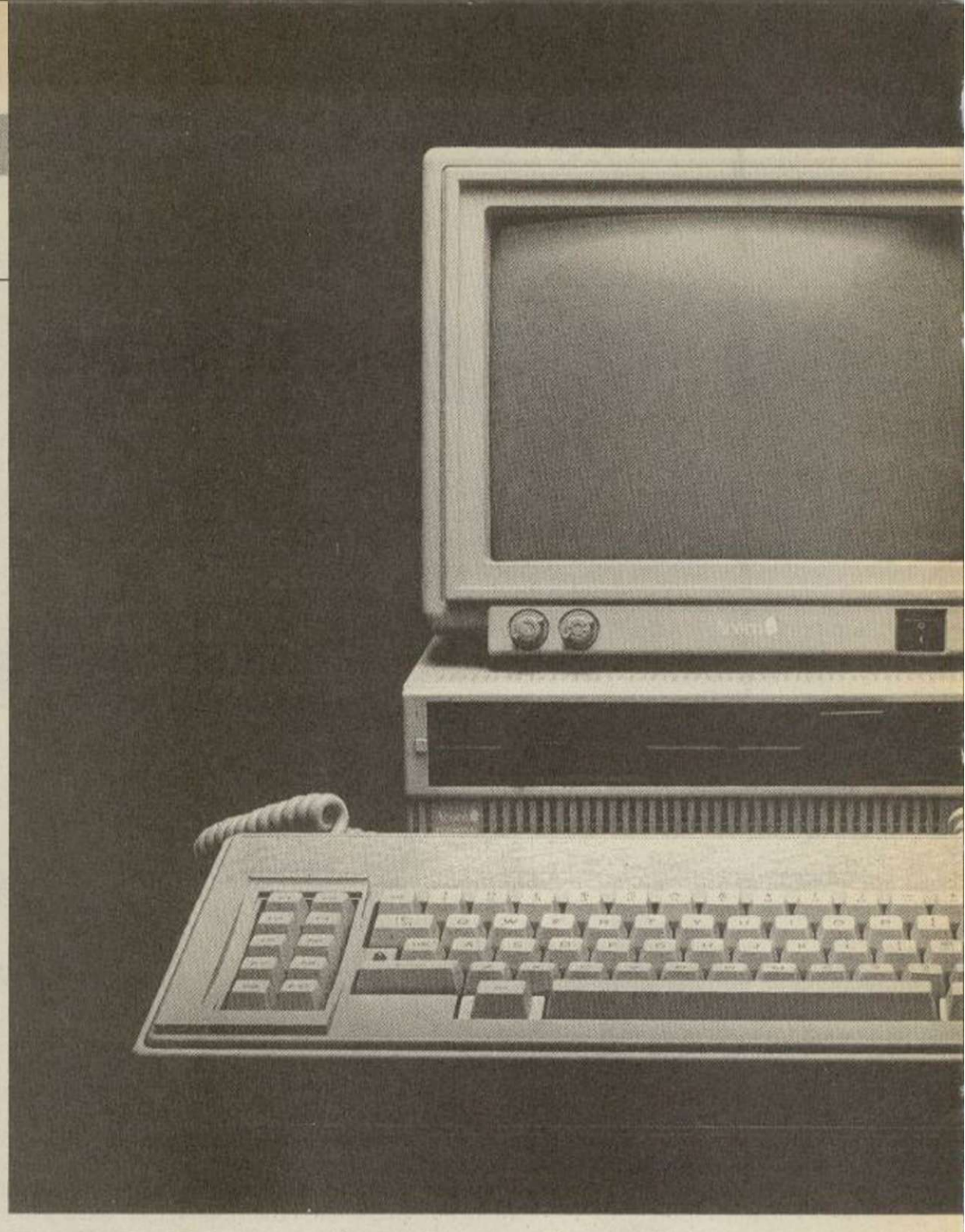
Toshiba is billing this machine as something which can replace a standard desk-top PC, not simply an attractive adjunct to it. It is certainly priced like a desk-top machine and performs like one.

The only real disadvantage to this argument has less to do with portability than its flexibility. Like most of the so-called lap-top PC-compatible and AT-compatible portables, there is no room inside the Toshiba for IBM-compatible expansion cards.

Although the machine already includes or offers options for most of the popular expansion upgrades – hard disc, parallel/serial, external drive, RGB, internal modem and memory expansion – there are some things, such as dedicated network connections, which cannot be included in the body of the machine and will require the previously-mentioned expansion card cage.

All in all, however, playing with the Toshiba T-3100 still must be one of the most pleasant portable computer dreams I have had.

The T-2100 – a mean performer.



BBC – Big Blue co

Acorn hopes that the M19 will give it a bigger share of the higher educational market. Anthony Thompson assesses its chances.

Acorn has long been the market leader in the field of educational computing, especially in primary and secondary sectors where the BBC Model B machine became almost standard equipment in many boroughs.

The Master 128K was a more powerful machine with more memory and the 512K upgrade kit gave the added advantage of being able to run some MS-DOS software, though it was not sufficient to make the machine truly PC-compatible. Higher education establishments wanted a machine on which they could teach the professional program packages which their students would be likely to encounter in a modern office environment.

In response to the demand for an industry-standard micro, a PC clone produced a package complete with 10 demonstration programs, including GEM, WordStar 2000 and SuperCalc 3.

Acorn makes no secret of the fact that the machine is a re-badged version of the Olivetti M19; the injection mouldings, instruction booklet and packaging all bear the Olivetti name. The installation and user guide, however, has been compiled by Acorn specifically for its version of the machine.

Striking feature

The first striking feature of the M19 is its size, or distinct lack of it. With a footprint of 12.7in, by 15in., it is less than half the size of a standard PC. The machine is supplied in three parts – monitor, keyboard and base unit. Power for the system is supplied from the high-resolution mono monitor, one of the major reasons the base unit is so small. A colour version will be available later in the year but to use one now would involve the additional expense of adding an external expansion box to power the rest of the system.

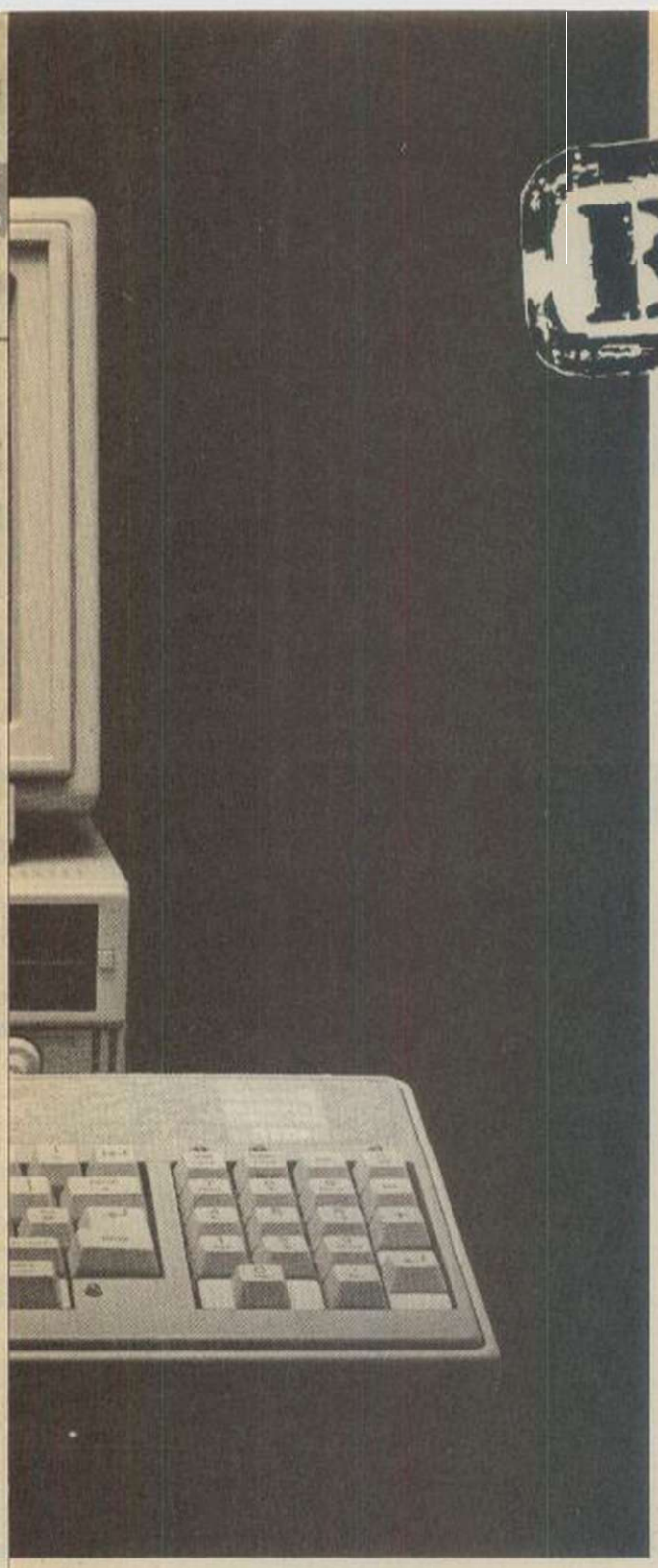
The monitor can provide a resolution of up to 640 x 400 with three other modems available for the text and graphics. It features brightness and contrast controls, as well as a system on/off switch on the front panel.

The base unit has two built-in half-height 360K disc drives set into the front panel. The central processing unit is based round the Intel 8088 processor, as in the IBM PC, running at 4.77MHz. It is interesting that neither Acorn nor Olivetti decided to incorporate the faster 8086 processor, used in the best-selling M24 and running at 8MHz, in the M19.

To have given the machine such increased processing power, combined with its compact size, would surely have made the M19 more appealing to many mopre prospective buyers. An upgrade is available which replaces the standard chip with the 8088/2 which also runs at 8MHz. The full kit includes a switch at the back, allowing the clock speed to be changed at will. At the rear of the base unit are blanking plates concealing the two expansion slots. Three interfaces are also provided as standard – an RS232, Centronics parallel and a video output. They are linked directly to the motherboard, unlike the IBM PC which uses three of its eight expansion slots to provide those valuable connections.

That is one reason the machine has such seemingly limited facilities for expansion. The other is that Acorn believes that the market at which it is aiming the machine, mainly educational, would have little reason for wishing to use use many expansion cards with the machine. Even the memory expansion is carried-out directly on the motherboard, by exchanging the 64Kbit RAM chips for 256KB replacements up to a maximum of 640K.

For those who buy the machine and then decide they want to use some form of expansion card there is another problem. Due to its neat, space-saving dimensions, the machine cannot accept standard IBM expansion cards. Four miniature cards are available from Olivetti – a second RS232 interface, a synchronous communications interface, a local area network interface and a SCS1 hard disc controller card. The last-mentioned becomes necessary when the optional 10MB hard disc unit is fitted. That operation also unearths its own set of problems; in addition to losing a valuable expansion slot and the second floppy disc drive, a fan to keep the unit cool must be



EXCLUSIVE

mpatible

installed. If you must use IBM-style cards with your M19, you have no alternative than to buy an expansion box which fits into an existing slot and allows for a single IBM-type card to be used. That would allow a miniature hard disc card to be installed which would then obviate the need to lose a precious disc drive or to install a cooling fan.

Useful

The base unit has two other features which set it apart from many machines in the same range. The first is a re-set switch which protects valuable components in the machine by eliminating the need to use the main power switch to re-set the machine. The second feature, attached to the re-set switch, is a volume control knob, a useful device but one which is often overlooked on many PC clones.

The keyboard is a standard PC design, a QWERTY typing section bordered by function keys and a numeric keypad. There are 10 function keys which, when used in conjunction with the shift and control keys, give a maximum of 30 programmable functions.

The keyboard has a built-in tilt to give a better typing position, using two adjustable feet at the rear. The colour scheme is a little strange but the overall effect is pleasing. Finished in the usual office grey, the keys are printed in blue ink and the five LED indicators are amber. Should you wish to use a mouse, a port at the rear of the keyboard allows an additional interface to be connected.

When the complete unit is placed on a desk, the keyboard seems to occupy a good deal of the available space, being almost twice as wide at the base unit. It is a pity that the keyboard was not redesigned with the function keys in a row along the top; that would have reduced the overall length and kept the machine's components in proportion.

Test disc

Three discs are supplied with the manual. The *Getting to know the M19* program gives the user a graphic description of the main components with a fair amount of technical detail. It also details of some of the optional devices, such as expansion boxes and hard discs which may be bought. The customer test disc puts the machine through some extremely thorough diagnostic procedures, while the final disc contains the MS-DOS utilities and the keyboard drivers for other European versions.

Overall, the Acorn M19 is a very well-designed PC though, at £1,499, it seems too expensive to be likely to sell in vast numbers. For Acorn, the old adage of getting what you pay for holds true. It is well aware of the increasing number of cheaper clones becoming available but believes its machine is built to a higher standard.

Limited expansion

It is limited not only by price but by its lack of compatibility with IBM-style expansion cards. Only four are available from Olivetti which, like Acorn, has no plans to produce more. When the Olivetti version was launched, many felt that the machine, although a good entry-level compatible, left a good deal to be desired in the expansion and clock speed areas.

It is a pity Acorn could not have made some of those improvements before marketing the machine. It must be remembered, however, that the educational market, where Acorn is undoubtedly the dominant force, is more likely to spend extra cash for an Acorn product rather than risk one of the lesser-known clone manufacturers.

NAME	PRICE	STANDARD CONFIGURATION	PROCESSOR
Acorn M19	£1,499	256K memory on motherboard, 2 x 360K disc drives. 12in. mono monitor, 2 expansion slots.	8088 running at 4.77 MHz
IBM PC	£1,699	256K memory, 2 x 360K disc drives. 12in. mono monitor, 5 expansion slots.	8088 running at 4.77 MHz
Walters PC	£599	256K memory, 1 x 360K disc drive. 12in. mono monitor, 8 expansion slots.	8088 running at 4.77 MHz
Opus PC II	£499	256K memory, 1 x 360K disc drive. 12in. mono monitor, 8 expansion slots.	8088/2 running at either 4.77 or 8 MHz
ARC World PC	£475	256K memory, 1 x 360K disc drive. No monitor, colour or monochrome graphics card. 5 expansion slots.	8088/2 running at either 4.77 or 8 MHz

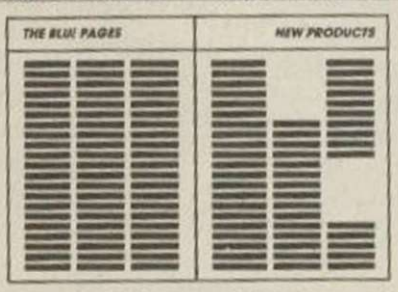
COMING SOON...

WHICH PC

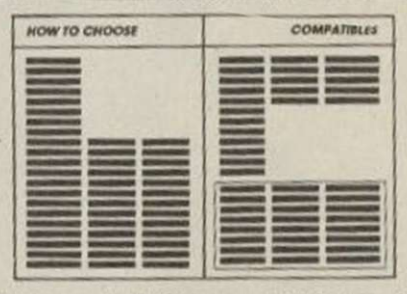
YOUR COMPLETE GUIDE TO HARDWARE · SOFTWARE · SERVICES

A new magazine for everyone interested in personal computers

Inside Issue One...

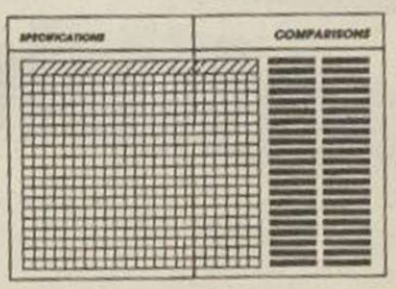


'The Blue Pages' — a comprehensive index of suppliers providing free editorial coverage for everyone in the PC market.

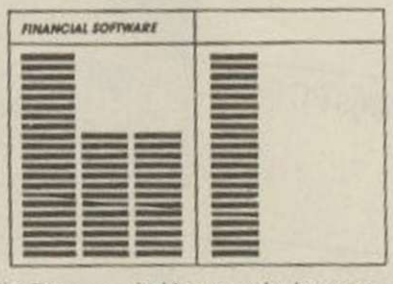


How to Choose — the first page or pages of our Hardware and Software Guides is devoted to details on what to look for and how to compare different products. Each is terminated by a checklist with tick boxes, so that potential buyers can make their selection systematically.

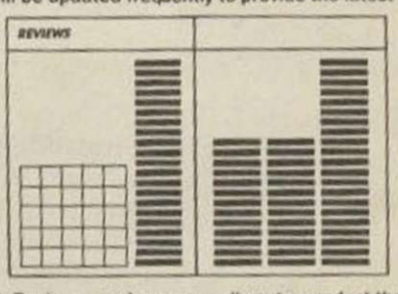
Guides to Choosing PCs, Software and Peripherals — each guide is a separate magazine in its own right. Software covered includes Spreadsheets, Databases, Word processors, Graphics, Special Applications and Miscellaneous. Hardware includes PC Compatibles, Printers, Disc Systems, Expansion Packages, Monitors, AT Compatibles, Networking Systems and Modems. Each guide contains details on How to Choose along with comprehensive specification tables and product reviews.



Product Comparisons & Lists of Specifications — for each guide we will look at three or four of the latest and/or leading products in that particular area. Readers will soon own an extensive library of what's available — past and present. These comparative reviews will be supported by one of the most exhaustive sets of specification tables currently around. These will be updated frequently to provide the latest data.



Specialist Features — inside successive issues we will focus on a particular interest group and deal with software aimed at those groups. Issue one will deal with financial software.



In-Depth Reviews — where we really put a product through its paces. Hardware will be thoroughly tested and parameters checked and compared, while software will be taken to its limits — and then some.

COULD THIS BE YOUR PROGRAM?

ARCADE
SIMULATION
STRATEGY
ADVENTURE

SPACE
SPORTS
WAR
ACTION

Is your program good enough to fill this spot?

Will your game be the next No. 1 hit?

Are you looking for **top** royalties?

Are you writing for leading computers such as Commodore 64/128, C16/Plus-4, BBC/Electron, Atari, Amstrad, MSX, Spectrum or any other 6502/Z80 Micro.

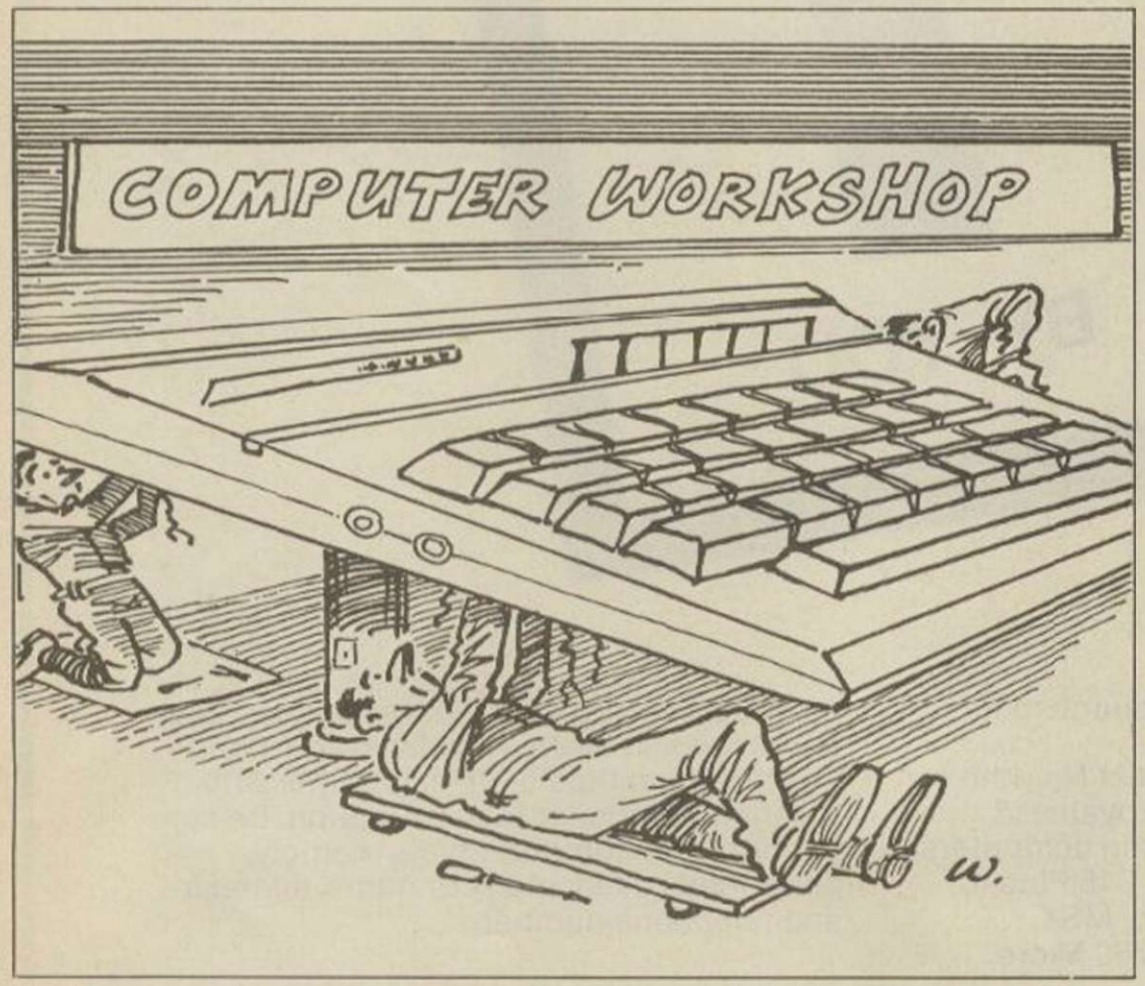
Answer YES to any of these questions and we would like to hear from you. Send your program tape or disc, together with full instructions for fast evaluation. Be sure to state your computer type, memory, peripherals used and your name, address and telephone number.

34 BOURTON ROAD GLOUCESTER GL4 0LE
Tel (0452) 412572

P.S: We are also looking for 6502/Z80 programmers for urgent conversion work.

Putting your computer back on the road

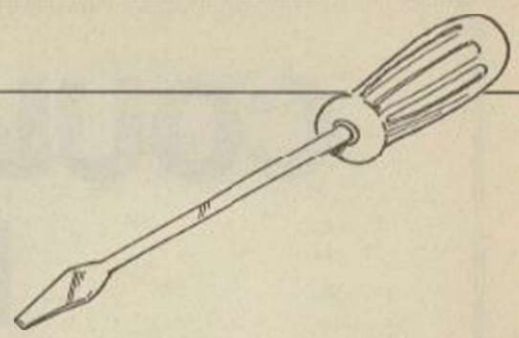
It is the one thing you hope will never happen to you. One fateful day, having switched-on your computer and monitor, you are faced with a blank screen. Despite the manufacturer's claims of superb reliability, computers malfunction. Connections break, fuses blow and the result is a non-functioning piece of equipment of little use to anyone. Companies exist which offer to repair your computer. We visited nine and compared their services.



Micro Mend

Micro Mend, a Peterborough-based repair company, has recently introduced a fixed-price range for all repairs on computers. The price includes not only parts and labour but also the cost of return postage and insurance. The average time taken is about two days and the charge varies from £16.95 for a Spectrum to £34.95 for any of the Amstrad CPC range.

The majority of the work arrives by post but several local people deliver their machines personally, although there is no reduction in price. When sending a machine, Micro Mend recommends wrapping well to avoid breakage. In some cases, it has received machines with cracked cases because of poor preparation but, with few exceptions, the company will replace them at no extra cost. In addition to the popular makes, most computer peripherals are repaired. Throughout the range all work is guaranteed for three months.



Micro Serv

Micro Serv claims that it can repair any computer from a ZX-81 to an Apple II. It has no fixed price scale; costs are calculated on the basis of parts used and time taken to carry-out the repair. The average price for a Spectrum, the computer repaired most commonly, is between £19 and £21 but does not include postage or insurance.

Based at Cumbernauld, near Glasgow, most of the work is delivered personally and many dealers in the area take their faulty products, glad of the 10 percent discount offered. The three working staff will give free estimates for repair and with some simple jobs it often needs only one hour to have the machines ready to be collected.

MP Electronics

A good deal of MP Electronics work involves repairing Spectrum computers which have been damaged by the interface being pulled out when the machine is still switched on. Because of most of the faults being similar, the company makes a standard charge of £20 for repairing a Spectrum. The price includes a complete overhaul, in which any work necessary to bring earlier models up to current specifications will be done. With other makes of computer, the range of faults is so wide-ranging that it is not practicable to offer a standard charge.

In addition to all the popular makes of computer, including mainframes, MP will also repair disc drives, printers and other peripherals. Most repairs are completed within 48 hours and the company's three-month guarantee covers not only repair but the entire machine. The company also offers a Freepost service, allowing customers to send their machines free.

Enfield Communications

Enfield Communications deals mainly with popular home micros. It can repair larger machines but they are normally sent

to contract engineers and therefore take a little longer. There is no fixed price scale for repairs, though most repairs fall between £20 and £30

Most work is completed within 48 hours but the company prefers not to guarantee completion in a set time, as unforeseen complications may cause delay. All machines are tested extensively, sometimes for several hours, before being returned by first-class post to their owners.

Essex Computer Centre

As with most computer repair companies, Essex Computer Centre also repairs many peripherals. Unusually, it offers to service any disc drive for £10. That involves stripping and re-building the drive, correcting any faults in the process. Being a high street store, it finds that most of its work is delivered personally by many of the home users in the Hornchurch area.

Repairs are completed within a maximum of three days and all work is guaranteed for between three and six months depending on the type of repair. For a Spectrum, where most of the faults tend to be similar, the average charge is around £20. For other machines the cost depends on the time taken and the parts needed to complete the job.

Video Vault

One of the biggest computer repair companies in the country, Video Vault specialises mainly in Spectrum and Commodore machines and its 30 staff handle around 600 machines a week. About half of the work arrives in the mail from home users. The other half is from contract work with dealers, schools and universities.

As well as repairing computers, the company sells a complete range of components and spares from keyboard membranes to upgrade kits. For £19.95, a Spectrum computer is repaired and fully serviced. The average price of a Commodore repair is £35.

Video Vault guarantees that all repairs will be completed within 24 hours and repairs are guaranteed for three months. In the near future it plans to open a second workshop in Manchester.

Capital Computers

Capital Computers finds that it deals with a very wide range of repairs, especially among the Commodore machines. It has a fixed price for Spectrum repairs of £17 including return postage but for other machines the cost varies too much to make it practicable to offer a fixed price scale.

Based in Cardiff where many computers are assembled, many of the staff are experienced engineers recruited from the manufacturing plants. Many customers deliver their machines personally, so Capital Computers has a separate waiting room in which they can wait while an estimate is made or repair is being effected.

Some repairs are completed the same day while others, because of extensive diagnostic testing, may take a little longer, up to a maximum of 72 hours. All work is guaranteed for three months, covering not only the repair but the entire machine.

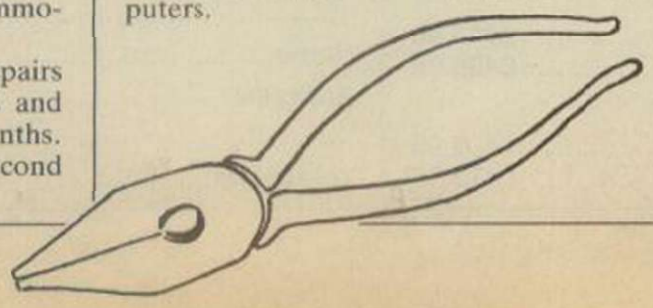
Micro Support

Micro Support offers a fixed price scale for the more popular makes of home computer. It varies from £18 for a Spectrum to £32.50 for an Amstrad 464 or a BBC model B. For the more obscure makes of computer the work is charged according to the numbers and type of parts used. Most repairs are completed within three days and are guaranteed for three months. In addition to home micros, Micro Support also offers a technical support service for business computers and will collect and deliver machines in the area. A full range of printers, disc drives and other peripherals are also repaired.

L T Weston

For £12, L T Weston will repair any Spectrum fault and guarantee the work for three months. Specialising in video and television maintenance, repairing computers began as a hobby for the owner but now forms a major part of the workload. Most computers are sent by post, suffering from faults such as faulty ROMs or worn membranes.

Repairs are usually completed on the same day and the machines are returned by first-class mail. A full range of Spectrum peripherals is also repaired and, in the near future, the company hopes to extend its range to Commodore computers.



Capital Computer Services,
Unit K2 Cardiff Workshops,
Lewis Road,
Cardiff
CF1 5EG.
Tel: 0222 614401.

Essex Computer Centre,
174 High Street,
Hornchurch,
Essex
RM12 6QP.
Tel: 04024 75613.

Enfield Communications,
135 High Street,
Enfield,
Middlesex.
Tel: 01-805 7434.

LT Weston Electronics,
Unit P2A,
Avonside Enterprise Park,
Newbroughtan Road,
Melksham,
Wilts.
Tel: 0225 705017.

Micro Support,
Unit 3,
13 Springfield Road,
Harrow,
Middlesex
MA14 1QF.
Tel: 01 863 7166.

MP Electronics,
Freepost,
Dereham,
Norfolk
NR19 ZBR.
Tel: 036287 327.

Micro Serv,
Westfield Industrial Area,
Cumbernauld
G68 9HN.

Micro Mend,
The Old School,
Main Street,
Farcet,
Peterborough
PE7 3OB.

Video Vault,
140 High Street West,
Glossop,
Derbyshire
SK13 8HJ.

MICRO MAIL

53 FENNEL STREET
MANCHESTER M4 3DU
TEL: 061 834 5780

COMMODORE

	RRP	OUR PRICE
Music Systems (includes Commodore 64)	£329.99	**£309.99**
Currah Speech	£21.95	**£19.95**
1570 Disc Drive	£199.99	**£179.99**

SOFTWARE ON DISC

Textpro – Wordprocessor –	**£12.95**
Datapro – Database –	**£12.95**
Zork I	**£11.95**
Zork II	**£11.95**
Zork III	**£11.95**
Hitch Hikers Guide	**£24.95**
Gemini – Home Accounts	**£24.95**
Database	**£24.95**
Cashbook	**£64.95**
VAT File	**£24.95**
Final Account	**£64.95**
Superbase – 128	**£99.95**
Superscript	**£79.95**

If the title you want is not listed all you have to do is send your cheque or P.O. for the retail price less our 10% Discount and state whether disc or cassette.

ALL DISC AND CASSETTE TITLES

10% OFF.

JUST TELL US WHAT YOU WANT!

COMMODORE

	RRP	OUR PRICE
Commodore 64	£199.95	**£185.00**
Commodore 128	£269.95	**£250.00**
Commodore 128 D	£499.00	**£470.00**
Commodore 128 D & Monitor	£631.00	**£545.00**
Music Expansion	£150.00	**£140.00**
1541 Disc Drive	£159.95	**£149.95**
1571 Disc Drive	£299.95	**£279.95**
Modem	£79.95	**£69.95**
Mouse	£69.95	**£59.95**
Light Pen	£29.95	**£24.95**
Sketch Pad	£49.95	**£44.95**
Speech Synthesiser	£24.95	**£21.95**
Blank Discs – Sony SS Box of 10	£12.95	**£10.95**
DS Box of 10	£16.95	**£12.95**

GENERAL

	RRP	OUR PRICE
Cheetah 125 Joystick	£8.95	**£7.95**
Pro 5000 Joystick	£18.95	**£16.50**
Comdrum Tape or Disc	£29.95	**£26.95**
Sound Sampler – Commodore	£49.95	**£44.95**
Data Recorders for all Commodores	£39.95	**£33.95**

Post and Packing: ***FREE.*** **ALL** Computers ADD £6 for value **UNDER £250**

All payments cheque or P.O. to: I. M. PRIESTLEY

SHOWROOM NOW OPEN

DIMENSION computers l.t.d.

27/29 High Street
Leicester LE1 4FP
Tel: (0533) 57479

THE MIDLAND'S LARGEST COMPUTER STORE

PRINTER OFFERS — Dot Matrix NLQ

Epson LX86	£235.00
Epson FX85	£374.50
Epson FX105+	£485.95
Epson LQ1500	£822.25
Citizen 120D	£184.95
Citizen MSP 10E	£282.95
Citizen MSP 15E	£362.95
Citizen MSP 20	£330.95
Citizen MSP 25	£417.95
Canon A50	£335.95
Canon A55	£426.95
Shinwa CPA80	£169.95
Star SG10	£229.95
Star SG15	£354.95
Star SD10	£354.95
Star SD15	£445.95
Star SR10	£445.95
Star SR15	£536.95
Star NL10	£253.00

JUKI 6100 OFFER

Juki 6100 Daisy Wheel Printer	£249.95
With Cut Sheet Feeder	£429.95

COLOUR PRINTERS

Epson JX80	£409.95
Canon PJ1080A	£473.95

CUT SHEET FEEDERS

Star NL10	£59.95
Epson LX80/6	£63.25
Juki	£199.95

TRACTOR FEED UNITS

Juki 6100	£159.95
Epson LX80/6	£24.95

Many other printers available at competitive prices — please ring for quotation

Large range of printer ribbons in stock at extremely competitive prices.

ALL ITEMS SUBJECT TO AVAILABILITY. **ALL PRICES INCLUDE V.A.T.**

Please add £5.00 towards carriage on any Printer order. To order, either send cheque/P.O. with coupon or ring **(0533) 57479/21874** with Access/Barclaycard number. Please allow 7 days for delivery from receipt of order or cheque clearance.

Send to: Dept. No. YC8, Dimension Computers Ltd., 27/29 High Street, Leicester LE1 4FP.

Item	Quantity	Price
.....		.....
.....		.....
.....	Total	.....

Name.....

Address.....

.....

Telephone:.....

Within Your Reach

£149.95* for a Hayes compatible, autodial, autoanswer with speed seeking smart modem from one of the UK's best-known modem manufacturers — that really brings the world of data communications within your reach!

If that wasn't enough, the new WS4000 is also fully intelligent and speed buffered. And you can add your choice of optional extras now or later, taking it right up to full V22 or even the 2400 bps V22 bis standard.

For only £149.95* you can reach out to Prestel, Telecom Gold, Micronet, Microlink and the world's databases, bulletin boards and telex links through your own telephone line. User-user file transfer too.

WS4000 is made to the same high quality as all our products. The price breakthrough is a direct result of our massive component buying power through high volume sales to business, home, educational and Government users throughout the world.

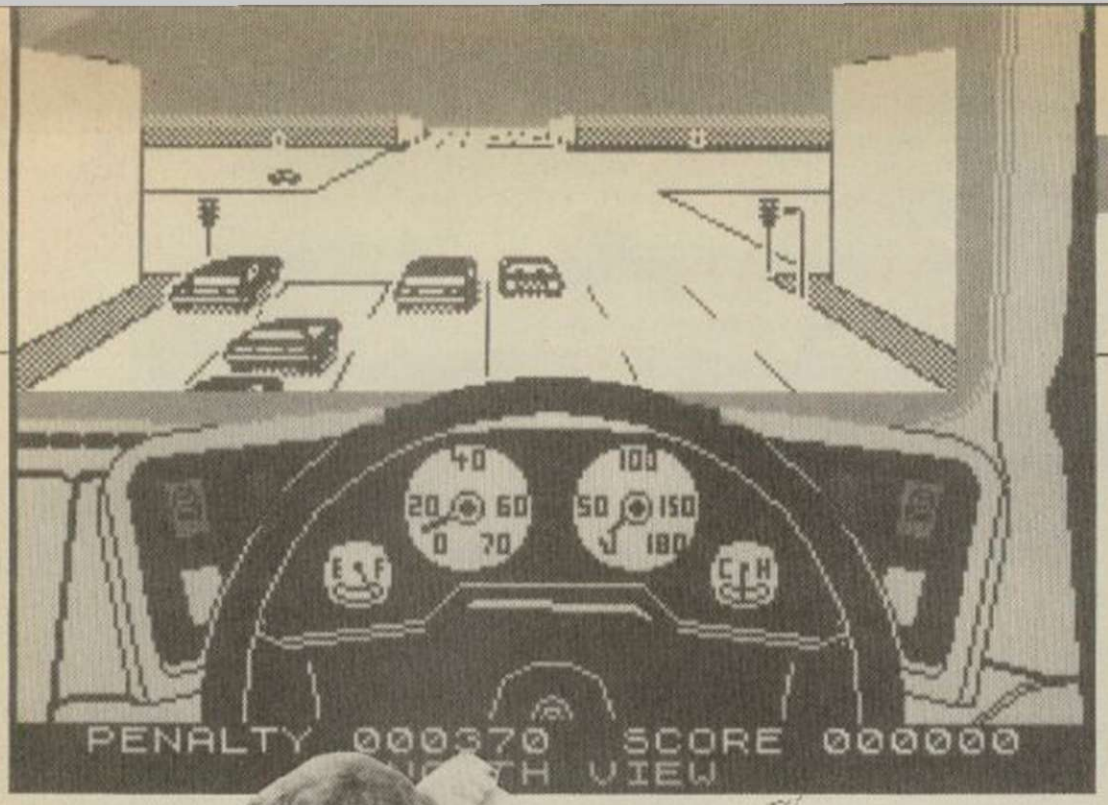
If £149.95* is within your reach — then so is the world.

*Price excludes VAT. Total delivered price, UK mainland, is £178.19. Prestel, Telecom Gold, Micronet and Microlink are registered trade marks of those companies. Access & Visa cards accepted.

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them.

MIRACLE TECHNOLOGY

MIRACLE TECHNOLOGY (UK) LTD ST PETERS STREET IPSWICH IP1 1XB ENGLAND
✆ (0473) 216141 6 LINES TELECOM GOLD 79: KEY 001 (Dealerlink 72: DTB 10135)
✉ 946240 CWEASY G 19002985 PRESTEL MAILBOX 919992265



Going fo

Sports simulations have been a mainstay of the games market ever since Track and Field hit the arcades. Francis Jago hops, skips and jumps his way through a selection of the best.

When Nolan Bushnall invented the *Pong* computer game in 1971 he can scarcely have imagined the effect it would have on a whole industry. Not only did he start the massive trend for computer games of any kind but he provided everyone else with ideas on which to base their games.

It was without question the arcades which really set sports simulations going, between two and three years ago. Although people had produced versions of tennis, squash and table tennis, they all tended to be re-hashes of Pong, with slightly different graphics. The real change was in mid-1983 when, out of the blue, Konami released *Track and Field* on an unsuspecting arcade-playing public.

Track and Field, and its subsequent derivatives, became one of the most popular games of all time and it was therefore not surprising that many home computer software houses took note. Activision, at that time not a well-known company in the U.K., was the first to take advantage of the success of Track and Field by releasing *Decathlon* for the

Commodore 64. Sales of the game were staggering and it can fairly claim to have started the joystick-snapping antics which have so affected computers recently.

Decathlon involved taking part in 10 sporting contests based on the Olympic event, with high scores achieved by combining skill with dexterity. Clever use of sprites and animation made the game a standard against which others should be judged.

Soon after the Activision game, Ocean released *Daley Thompson's Decathlon* for the Spectrum and Commodore. Although it lacked the originality of the Activision game, it managed to resemble the arcade game more closely and consequently soon reached number one.

Although arcade clones were the order of the day, the ideas behind sports simulations were far more wide-ranging. It was during that period that Addictive

Ian Woosnam.

or gold

Games released *Football Manager*. Although it was much more of a strategic simulation, it has continued to sell well for more than two years and will always be remembered as a true classic.

Football was also the inspiration for another classic. Released originally only on cartridge, *International Football* for the Commodore 64 is still the game against which all football games are judged. Graphically unexceptional, it had the rare ability to fascinate at first glance. That, combined with a fun two-player mode, made it one of the biggest cartridge-based games and it still sold well when it was released on cassette six months later.

Most outstanding

It was during that period that U.S. sports simulations, excluding the already hugely-popular Decathlon, started to make an real impact. The most outstanding was *Summer Games* by Epyx. Imported by what was then Quicksilva, it did not sell well, mainly because it was available only on disc, but was technically the best multi-event game yet. Combining such diverse sports as diving and running, together with elaborate opening and closing ceremonies, it was what everyone expected of U.S. games – over the top.

One company from across the Atlantic which was having more success was Activision. Using its base in London, it released a series of sports simulations for the Commodore 64 and Atari 400/800 which, although based on U.S. games, managed to sell well on the back of the already successful Decathlon.

Although most of the games were available only for the Commodore, conversions not being so profuse as now, the Sinclair Spectrum also received a fair amount of attention for sports games. As well as the Ocean Decathlon game, Psion released *Match Point*, a sensational tennis simulation which took the world by storm. Using a 45-degree viewpoint and allowing the player to smash, lob and volley, Match Point was, for its time, the most impressive game on the Spectrum and shops all over England sold out within minutes.

With the demand for sports games increasing, more and more weird and wonderful simulations were being released. Another trend was motor racing simulations. Although there is a fair amount of argument about which company released the first three-dimensional car racing game, it was undoubtedly *Pole Position* by Atari which created the most stir. Its cockpit view, together with realistic turns and signposts, led to many derivatives, of which *Pitstop II*, the U.S. Gold split-screen game, proved to be the most playable.

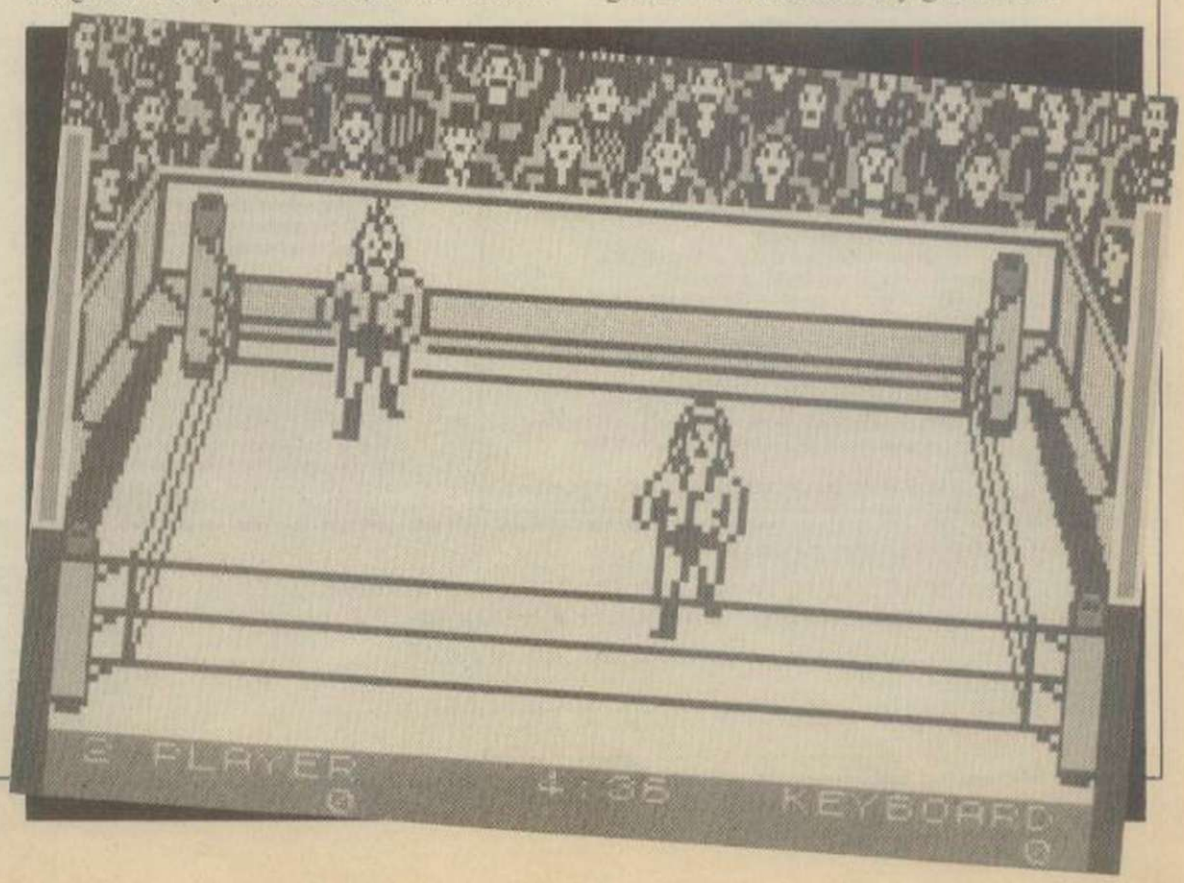
As motor simulations became more and more common, people searched for variations. Eventually this genre of sports game finished with *Revs* on the BBC. Programmed by Acornsoft, it was without question the most realistic driving simulation and still has a dedicated following.

As programmers looked for more and more diverse sports to computerise, the arcade trend for fighting and martial arts games seemed the natural route. Alligata released *Knock Out* and shortly after both Elite and U.S. Gold released boxing simulations. After those games, subjects such as surfing, volleyball, golf and baseball have all been converted successfully to a variety of home computers.

More improvement

Even approaching Christmas, 1985, sports games were still selling in great quantities and when U.S. Gold released the Epyx *Winter Games* across all formats, it sold more than 150,000 copies. In 1986 there has been a distinct slowing in the appearance of new sports simulations, with the notable exception of combat games. What might re-kindle interest is a new release by Epyx. *World Games* promises to be the best yet, with new events, better graphics and more game play.

Although slightly lacking in originality now, sports simulations are still a sure-fire hit. As each new sport is converted, better graphics and more sound are incorporated, to make each game better than its rivals. If the trend continues, the sports may become more diverse but the games will undoubtedly get better.



MAKE YOUR INTERESTS PAY!!

Train at home for one of these Career Opportunities

More than 8 million students throughout the world have found it worth their while! An ICS home-study course can help you get a better job, make more money and have more fun out of life! ICS has over 90 years experience in home-study courses and is the largest correspondence school in the world. You learn at your own pace, when and where you want under the guidance of expert 'personal' tutors. Find out how we can help YOU. Post or phone today for your **FREE INFORMATION PACK** on the course of your choice.

Introduction to Computer Programming	Programming in BASIC
Programming in COBOL	Electronics
Electrical Engineering	Electronic Engineering
Elec. Contracting/ Installation	Radio, Audio and TV Servicing
GCE over 40 'O' & 'A' level subjects	

Course of Interest .....

Name _____

Address _____

_____ P. Code _____

ICS International Correspondence Schools, Dept. ETS96
312/314 High St., Sutton, Surrey SM1 1PR.
Tel: 01-643 9568 or 041-221 2926 (24 hours)

TROJAN CAD-MASTER

THE ULTIMATE IN GRAPHICS TOOLS

SUPERB GRAPHICS SOFTWARE
PLUS
A TOP QUALITY LIGHT PEN

CBM 64 SPECTRUM

Discover the exciting world of creating your own graphics on screen.

- **FREEHAND DRAW** - 5 pen thicknesses inc. Quills
- **PAINT BRUSH** - for the artistic touch
- **FILL ANY SHAPE** - use 16 colours and 11 patterns.
- **GEOMETRIC SHAPES** - circles, boxes, triangles, lines & banding.
- **DYNAMIC RUBBER BANDING** on all geometric options.
- **PIN-POINT FUNCTION** - for pixel accuracy on all functions.

Plus many more too numerous to mention in this ad. All these features in the Program + a top quality Light Pen and an Instruction booklet in one reasonably priced package. Easy to use for creating colourfull pictures or technical drawings. Ideal for use by all ages of micro users. Full back-up service from manufacturers. Available at good dealers or direct from Trojan Products.

Please state which Micro.

ONLY £19.95 per pack

TROJAN

Micro Computer Software & Accessories
Send cheque/P.O. to:
TROJAN PRODUCTS
Dept YC1, 166 Derlwyn, Dunvant,
Swansea SA2 7PF Tel: (0792) 205491
TRADE ENQUIRIES WELCOMED

pride utilities

UNIT 14, WHITE HILL HOUSE, 6 UNION STREET, LUTON, BEDS LU1 3AN
THE UTILITY PEOPLE TEL (0582) 411686

FOR YOUR AMSTRAD 464-664-6128

ODD JOB
£12.95 DISC £19.95 ROM

STILL THE BEST DISC UTILITY PACKAGE

A complete disc utility with all the programs YOU have told us you wanted all together in one amazing package. A total of 39k of disc space used.
Just look at some of the features:
- A complete directory editor with which you can examine the disc directory and easily alter the contents.
- Recover erased programs.
- Hide programs from the directory.
- A complete sector editor to examine and/or alter the contents of files in HEX or ASC11.
- Map out your disc and locate where files are on the disc.
- Prevent programs from accidentally being erased.
- An intelligent disc copier that can copy those damaged/non standard sectors on a single or twin drive system.
- Format in half the time on either drive. Ideal for 5.25 inch second drives.
- Transfer your little used programs/files from disc onto tape to reclaim expensive disc space.
- Increase the speed of your disc drive by up to 20%.
- Load and list protected BASIC programs.
- All instructions are supplied on disc on a separate help menu.
- Simple to use with single key selection.
- Makes full use of the disc drive. A to A, A to B, B to A, etc.
- Compatible with all Amstrad CPC computers.

All this for the incredible price of £12.95 on disc only
ODDJOB is constantly upgraded — check with us the current version No. and if you wish, return the disc with £2 for upgrade.
NOW A ROM VERSION ODDJOB AVAILABLE — £19.95.

TRANSMAT
£7.95 CASS £11.45 DISC

Easy tape to disc transfer. This professionally used and respected utility has set the standard in tape to disc transfer that others attempt to mimmick. Rated highly by the computer press.

Transmat's many features include
• Easy Operation • Auto or non auto modes • Relocator for programs which overwrite the disc area • Erase • Catalog files • Rename • Disc header reader • Select user area • A or B drive working • Transmats itself.
Also available on ROM only £19.95.

SPIRIT
£5.95 CASS

The perfect advanced software complement to Transmat for those knowledgeable in computing—Spirit offers all the tools you need in one economic package to transfer those genuine headerless programs onto disc.
To use Spirit you need a dissassembler and some knowledge of machine code.

PRINTER PAC 11
£7.95 CASS £11.45 DISC

The screen copier. The complete printer utility for most popular dot matrix printers, including the DMP 2000 • Full proportional shading • Full size dumps • Variable buffer option to release the computer • Text dumps • all models catered for.

NEW!

FIDO
NEW! £11.95 DISC

A general file and disc organiser. If you have a lot of discs and you can never find the program you want, then FIDO is your answer. Its many features will allow you to completely organise all your files/discs and manipulate them using a specially designed database. This menu-driven disc can store up to 200 discs Or 2150 programs • Full disc utility section • Security password system (to protect your database) • Separate programs runner • Will search and list • Sort into alphabetical order • Printer option • Find free space • Very easy to use • Well up to Pride's usual high standards.

SUPER SPRITE
NEW! £7.95 CASS £11.45 DISC

Creates fast moving animated games easily. An extremely powerful and versatile piece of software ata realistic price. SUPER SPRITE is a menu-driven friendly program which will offer you hours of enjoyment designing your own sprites. Included is a demo to show you the possibilities of designing and writing your own animated software. The complete instruction book gives examples of how to create and animate sprites for your own programming.

IF YOU'VE WRITTEN A UTILITY UP TO OUR HIGH STANDARDS PLEASE CONTACT US.

PCW ORDER FORM

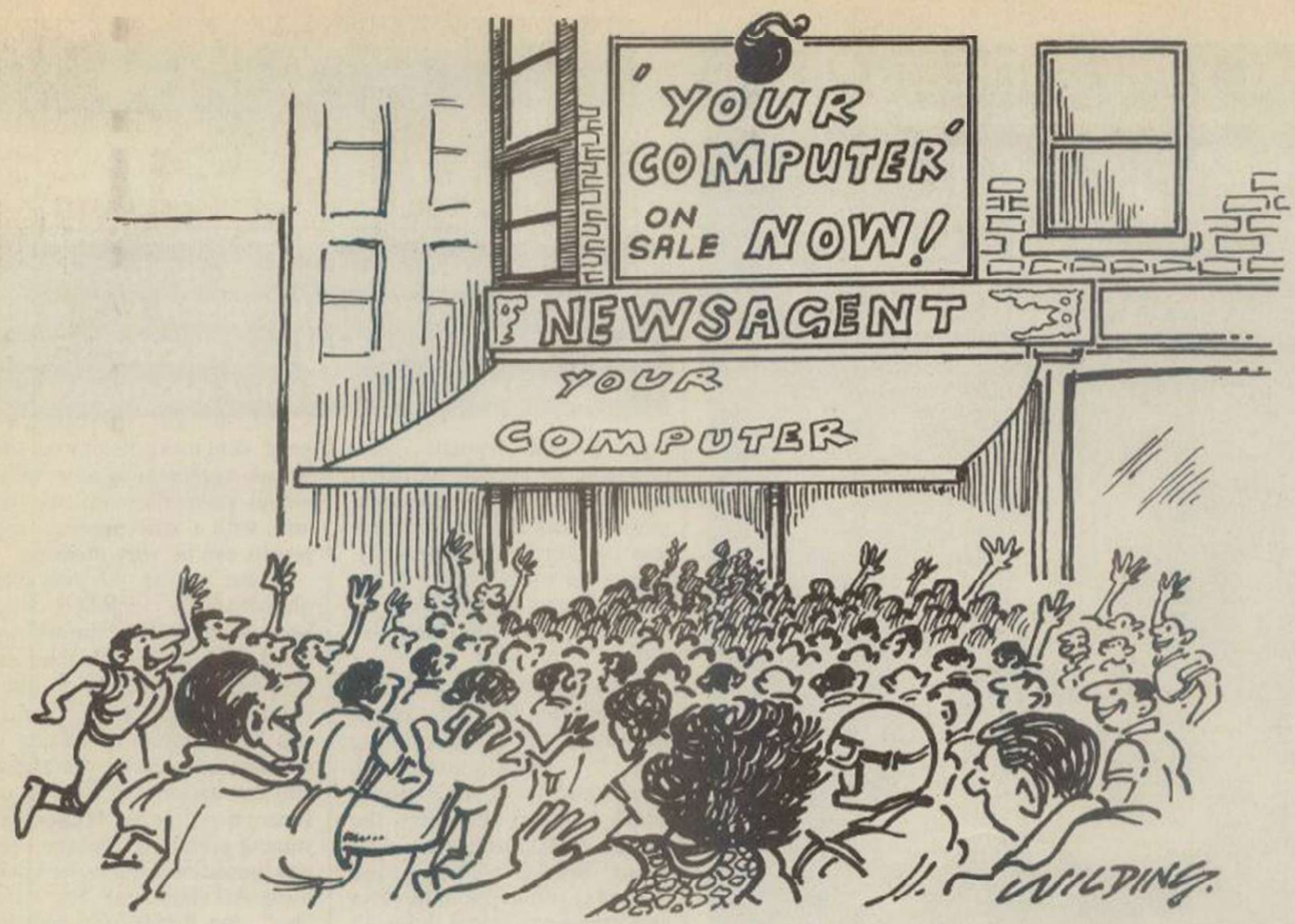
All prices include VAT and P & P. For Europe add £1 title. For Australasia add £1.75 per title. For rest of world £1.50 per title. INC AIR MAIL. Europe C.O.D. add £3.00

NAME _____

ADDRESS _____

_____

	Cass	Disc	Rom
TRANSMAT			
SPIRIT			
FIDO			
PRINTER PAC II			
SUPER SPRITE			
ODDJOB			



Stay ahead of the crowd subscribe to *Your Computer*

While the scenes at your local newsagent are unlikely to be so frantic as those depicted in our cartoon, it is a fact that copies of the latest issue of *Your Computer* disappear fast from the shelves. If you cannot go to the shops on our publication date, you could miss the mixture of news and practical features which make *Your Computer* one of the most popular home computer magazines.

The only way to avoid possible disappointment is to take a subscription to the magazine. In that way a copy will drop on to your doormat each and every month. Copies are sent direct by our printer so by subscribing you should receive the magazine even before it reaches newsagents.

A subscription also makes an ideal present for a friend or relative. If you know someone who takes computing seriously, why not make them a present of a subscription?

To subscribe to *Your Computer*, complete the form and send it, together with cheque or postal order for £14, to the address shown. Do not delay. Send your order now and relax in the knowledge that you will never again miss a copy of *Your Computer*.

Your Computer (Subscriptions) Oakfield House, Perrymount Road, Haywards Heath, RH16 3DH

Name _____

Address _____

_____

_____ **Postcode** _____

From moving pictures to synthesised speech, Anthony Thompson looks at some software designed to add a professional touch to your programs.

Adventures in prog

Few of us are born without potentially great programming skills. Some will be happy with their best efforts, others will despair and a few will spend many unhappy hours at the keyboard wondering how best to animate a particular sequence, initiate a certain response, or produce the desired sound. During the last few years, however, the software industry has become increasingly aware of the growing demand for utilities to assist in Basic and machine code programming and many packages of the type are available.

Initially, toolkit packages were produced. They provided the user with additional graphics or sound commands which would allow the drawing of circles, ellipses or other shapes by inputting a few coordinates. Later, more specialist packages allowed the user to design sprites or scrolling backgrounds using simple menu-driven procedures.

As adventure games became more popular, utility programs to assist in their creation reached the marked and, with the advent of the text and graphics adventure, many were upgraded to permit the addition of pictures to text.

All those programs permit an average programmer to produce games of professional quality, as sequences of animation or sound can be saved and used as part of your programs.

Although no royalties or fees need to be paid to the company which developed the software, all insist that, should you intend to sell the program commercially, you should mention that it was written with the aid of the company's utility. Many offer a criticism and assessment service for all programs written with their software which could lead to publication and royalties. We look at some of the sound and graphics utilities available and compare the results.

Upper limit

Speech is a software speech synthesiser available for Amstrad, Commodore and BBC computers. By converting English words into phonems or speech particles, the program allows your computer to say anything regardless of length or complexity. Once the main program has loaded, two commands can be used to make the computer talk.

Both need to be preceded by a "|" (shifted @). The first is the |say command. By entering |say, " " the computer will speak any word or sentence which appears between the speech marks. using the command, Speech translates the lines of text into phonetic form and then pronounces them. In doing that, the program refers to a file dictionary which stores the correct pronunciation of several words.

The English language has more than 2,000 exceptions to its rules of pronunciation and, naturally, the Speech program cannot store all of them. Therefore, when using the |say command, some words may be badly mis-pronounced and sometimes more than a little difficult to comprehend.

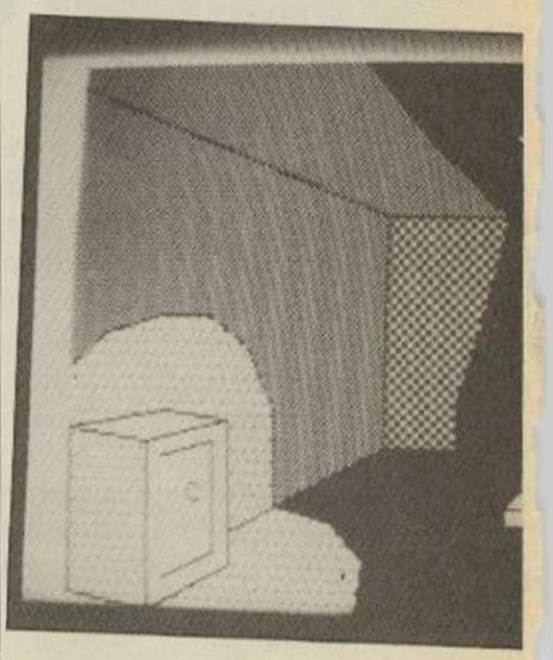
In-betweening

The |say command, however, allows a limited amount of control over the spoken word. A comma, hyphen or space causes the computer to pause while speaking. A full-stop at the end of a line lowers the pitch of the last word and a question-mark raises it.

Digits between 1 and 9 are recognised and pronounced properly when using the command. An edit function allows you to add new words to the dictionary or delete ones which you do not require and that can improve the diction of the |say command.

Far more impressive and a good deal more flexible is the |speak command where individual phonemes are spoken and, with a little practice, the results can be very pleasing.

A list of the 49 available phonemes is included with Speech and allows almost any word to be pronounced properly. The pitch of individual phonems within words can be adjusted by adding a number to the end so that stress and intonation can be added. It can, however, be a time-consuming process to find the best pronunciation for a word when using this command. The word "let", for example is spoken best when entered as "lai5ai4t". The pitch of an entire sentence can be adjusted using the |pitch command, followed by a number between 1 and 20 to precede a |say or |speak instruction. At 20, the voice resembles Minnie Mouse while at 1 it is reminiscent of Frank Bruno.



In addition to the Speech program, five other files are included. There is a demonst-

ration of the Speech program where text is printed on-screen and spoken simultaneously. it is rather disappointing as the |say command is used and some of the words are badly pronounced.

Perhaps the most interesting of the extra programs is Sayfile which speaks the contents of any document file. A full set of comprehensive notes on using Speech and incorporating it as part of your programs is also included and can be printed on-screen or dumped to a printer.

Overall, Speech is a superb utility and can even be used to produce weird sound effects for your programs. Offering similar quality to far more expensive systems, Speech is out on its own.

The Quill is an adventure-writing system which allows someone with very little programming experience to write

BUYERS' GUIDE TO UTILITIES

NAME	PRICE TAPE	PRICE DISC	MACHINE RANGE
The Graphic Adventure Creator	£22.95	£27.95	BBC, Spectrum, Amstrad, Commodore
The Animator	£14.95	£17.95	Amstrad CPC only
The Quill	£14.95	£17.95	BBC, Spectrum, Commodore, Amstrad
The Illustrator + Quill	£22.95	£27.95	Spectrum, Commodore, Amstrad
Speech	£9.95	£11.95 (£14.95 Amstrad)	Amstrad, BBC, Commodore

SUPPLIERS GUIDE

The Animator
Discovery Software
Alpha House
10 Carver Street
Sheffield
S1 4FS
0742 753423

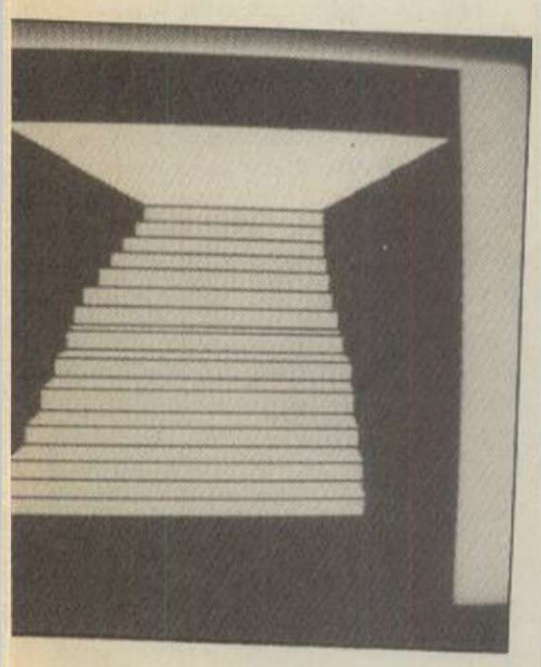
The Illustrator and Quill
Gilsoft
30 Hawthorn Road
Barry
South Glamorgan
0446 732765

Speech
Superior Software Ltd
Regent House
Skinner Lane
Leeds
LS7 1AX
0532 459453

The Graphic Adventure Creator
Incentive Software Ltd
54 London Street
Reading
RG1 4SQ
0734 591678

The combined Quill and Illustrator package is currently on special offer at £16.95 for a cassette and £18.95 for the disc version. The offer ends September 30th.

ramming practices



a professional-style adventure game. Information for the adventure such as a location description or a direction is stored in a database which is the heart of the program. An editor enables data to be added or deleted to and from the database, while an Interpreter extracts information from the database when running an adventure.

The manual is very comprehensive and easy to follow. A sample mini-adventure is included in the first chapter and is the perfect introduction to the working of the system. In the simple example, all you need do is input location descriptions and the possible directions of movement and The Quill does the rest. On testing the adventure, you find that, should you move in the wrong direction or enter a word not in the database vocabulary, the computer responds automatically with "I can't go in that direction" or "I don't understand".

Once you have reached that stage, you should understand how The Quill works and want to learn more. The manual then explains gently methods of adding more complexity to the adventure, showing you how to add more words to the database vocabulary, make messages appear during the adventure and how to allow objects to be manipulated. The sample adventure continues to develop in a manner which teaches you how to create almost any situation for which you could wish in your adventure.

The manual then gives tips on designing a game and even on selling your adventure. It would take only a short time for even a newcoimer to produce a high-quality product. It should be noted, however, that any adventure is only as good as its author's imagination, regardless of how well-structured it is.

Key frame

Designed to be used specifically with The Quill, *The Illustrator* allows the budding adventure writer to add detailed graphics to text. It is based on a database which contains the necessary drawing commands and an interpreter which interfaces with The Quill to produce pictures at the required locations. To create a graphics adventure using The Illustrator, you first need to write the text with The Quill. In the manual, the sample adventure from The Quill, recorded after The Illustrator, is used to show how to add pictures to text using the system.

By moving a cursor round the screen, lines can be drawn and boxes can be filled or shaded in varying colours and densities until you create the desired scene. One interesting feature is the ability to create a standard picture and then reproduce it in any number of other pictures, a useful feature if any items are to be repeated at other locations, such as doors or windows. The upper limit of 254 pictures should be sufficient for even the most ambitious adventure writers.

Limitations

The Illustrator is the ideal complement to The Quill for any serious adventure writer but it is not the perfect drawing system. It has no box or circle commands, so creating even a simple picture can be a long process.

Another program called *The Splitter,* included with The Illustrator, is needed to split the

Contined on page 38

Continued from page 37

screen so that text and graphics can be displayed together. It allows you to choose the number of lines the picture occupies, having the picture permanently on-screen or having it removed at the "more . ." prompt which appears when there is too much text to occupy the space left by the picture. In that case, the picture can be recalled using the "look" command.

To create the impression of smooth, continuous movement in a program is a difficult task, even for the relatively experienced programmer. *The Animator* is the latest release from Discovery, the utility label of Gremlin Graphics. It allows animated sequences to be created from just two or, in some cases, one drawing. The program works on a similar principle to a cartoon.

There, many hundreds of slightly different pictures are used to give the impression of movement. With The Animator, you need draw only the first and last pictures of the sequence. The program, using a process called in-betweening, then generates the missing frames. The complete sequence can then be run at up to 25 frames per second.

Tiny text

More than 20 drawing commands, including circles and polygons, can be used in creating the main or key frames. Those pictures can then be copied to another frame where they can be contracted, expanded, rotated or reformed into a different pattern. If you wanted to show a character walking to a ladder and climbing it, you would have first to show him standing to one side of the ladder and then move to another frame to show him at its base.

A final key frame would then be needed to show him at the top of the ladder. If you drew only a picture of the character at one side of the ladder and then on top of it, the animated sequence would show him flying through the air to the position given in the last frame. It is important to remember that each key frame must have the same number of lines as the first or the computer will be unable to calculate the positions of the remaining lines when calculating the in-between frames. That problem can be overcome easily by super-imposing lines inconspicuously round the screen, thus allowing you to use additional lines in subsequent frames.

User-friendly

By positioning the cursor on the screen and pressing a few keys, it is possible to change the standard ink colours, fill-in shapes and even to view previous frames to check the number of lines. The finished sequence can then be saved to tape or disc. Towards the end of the manual is a description of how to incorporate those sequences into your Basic programs.

Although The Animator is a wonderful utility, its usefulness is very much dependent on the type of computer with which it is used. On the 464 and 664, there is only 17K of memory available for storing frames compared to 81K on the 6128. The number of frames you can fit into that memory varies according to the number of lines each frame contains.

An indicator on the main menu screen gives a rough indication of how much memory has been used and should prevent you running out mid-way through a sequence. Even the available memory may be limited on certain models in the Amstrad CPC range but there is no easier way of creating animation.

A direct competitor to the combined Quill and Illustrator package, the *Graphic Adventure Creator* is an all-in-one graphic adventure-writing system. It features a command interpreter capable of handling complex sentences and multiple command lines. It can also understand the word "it" and therefore allows the user to use commands like "Pick up the box and open it", as with many professional adventures.

Uninviting

The manual is more than a little uninviting, having been printed in small, closely-packed text, but the content is sound. In a similar way to The Quill, a sample adventure is included in the first chapter but it is used to show the correct structure of an adventure rather than to teach the workings of the system.

Only on moving to the next chapter, which covers graphics, are you invited to switch on the computer and squint your way past the program's Lenslok protection system.

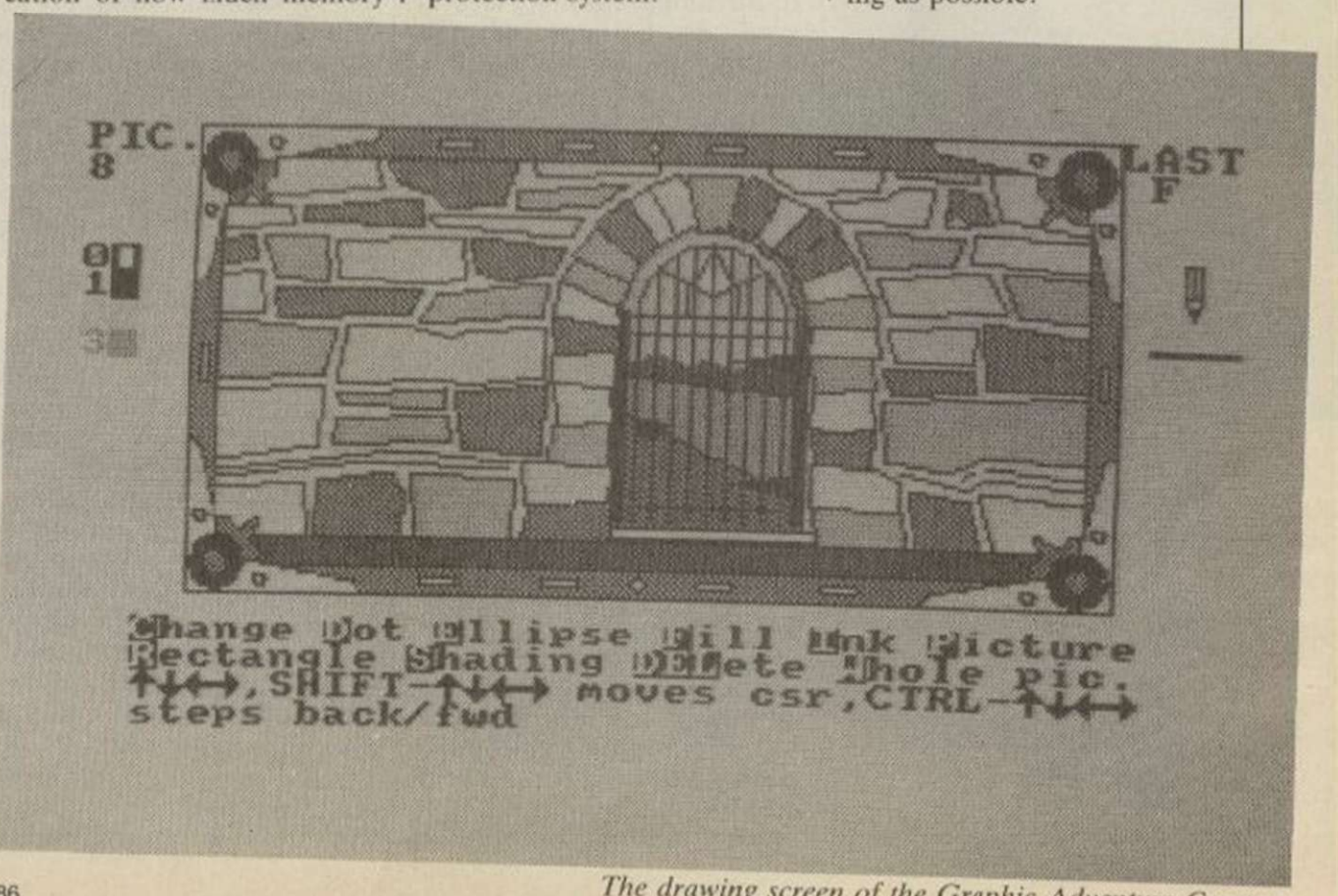
The picture window is small but the extensive range of drawing commands allows very intricate pictures to be created. Boxes and ellipses are drawn easily using a few keystrokes and areas can be shaded or filled in a choice of up to 27 colours. In addition to allowing more realistic pictures to be drawn, the wide range of commands add considerable speed to the process.

Useful

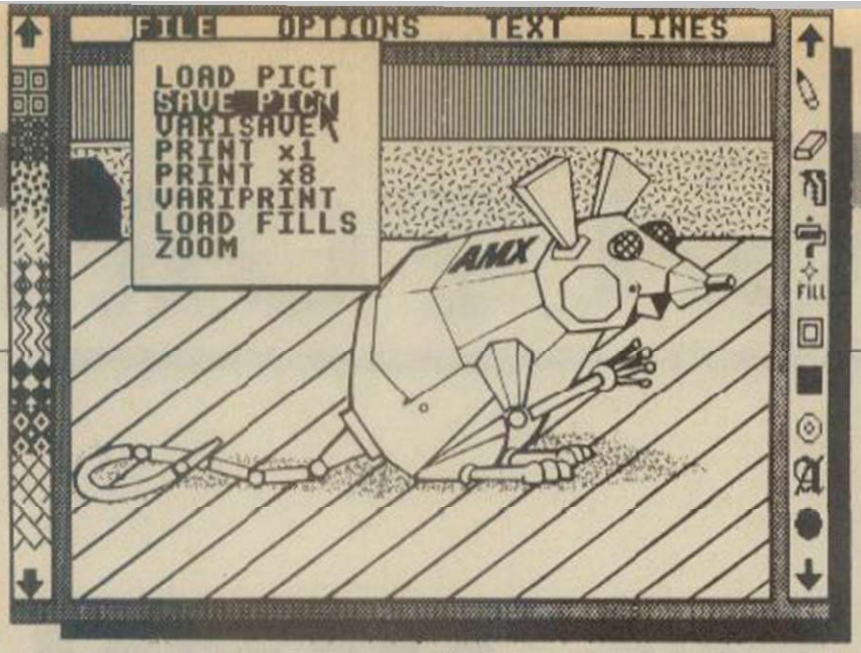
Using The Illustrator, for example, a circle would have to be drawn on a pixel-by-pixel basis, a process which uses a great deal of memory.

The manual has but one brief chapter devoted to graphics, designed to encourage the user to experiment. It then explains how to develop the adventure further with details about increasing the vocabulary, detecting words and producing messages. The manual is not so user-friendly as some available but, with a little perseverance, even an absolute beginner to programming can produce a very well-structured game with pleasant graphics.

The Graphic Adventure Creator is a useful utility for beginners and experts alike. It does the hard work and allows the user to concentrate on making the adventure as exciting as possible.



The drawing screen of the Graphic Adventure Creator.



Roger Garrett reports on utilities any good artist should not be without.

Graphics on the Amstrad

Graphics utilities are in many forms. They range from the basic draw-a-circle, colour-it-in-type through to those for the more serious, advanced user. We look at three types of drawing aids, The Mouse, The Graphpad and, finally, The Conventional manner, i.e., keyboard input.

Three ways of creating whatever your imagination allows, they do not represent the best of what is available – only you can be the judge of that. Suffice it to say they represent some of the graphics utilities which are available.

Of the three packages at which I looked I must confess the one which pleased me most in terms of user-friendliness was the AMX Mouse; combining ease of use with very good software, it offers the budding artist all that is needed to create excellent graphics on-screen. It will also allow more serious programmers to create their own designs for use in their programs.

Segments

On loading, you are presented with a well-defined art-screen. The screen is [illegible] into five segments which include the pull-down menu bars, the mode icons, the pattern bar, the current selected pattern area and the drawing area. The pull-down bars are situated at the top of the screen and consist of four menus – File, Options, Text and Lines. By moving the mouse-controlled cursor to the bar of your choice and pressing the Execute button you are shown a graphic window listing the various commands.

On the far right of the screen are the mode and fill icons, which include the various icons for use in drawing circles, boxes, filling designs. The far left of the screen contains the pattern mode. Numerous patterns are available for your use or, if you prefer, you can design your own by using the pattern design grid. One really pleasant feature is the Zoom facility, which permits you to work on your picture in small areas at a time and helps to give it that professional touch.

I found the utility very easy to use and in no time at all I was drawing pictures. Even I was impressed with it and I am no artist. Overall this package represents everything the amateur and professional artist could require.

A different type of utility but offering simila[illegible] characteristics f[illegible] Graphpad 2. Th[illegible] is complet[illegible] digit[illegible] and s[illegible] [illegible] is [illegible] full [illegible] [illegible] of the p[illegible] [illegible] [illegible] [

AMIGA™ FOR SALE

£1,000!

H & P have specially imported a limited quantity of new Commodore AMIGA computers from the U.S.A.

The H & P AMIGA has 256k memory with the original AMIGA Colour Monitor; Single Drive; U.K. Power Supply and includes all normal documentation and software. **ONLY** £1,000 (plus VAT). Amazing Value!

URGENT! Act quickly as this is a limited offer!

(Mail Order Only)
H & P Computers
9 Hornbeamwalk, Witham, Essex CM8 2SZ
Telephone: 0376 511471

H&P Home Personal COMPUTERS

Copyright and registered trademark H&P computers
Wolphaertsbocht 236, 3083 MV, Rotterdam, Netherlands. Tel: 01031-10231982 Telex 26401 a intx nl

DISCOUNT COUPONS

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

10%

GRAFSALES

REDEEMABLE AT STAND NO 3071
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

10%

H.S.V. COMPUTER SERVICES LTD.

REDEEMABLE AT STAND NO 3095
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£2

ALLIGATA SOFTWARE

REDEEMABLE AT STAND NO 1501
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

25%

DURELL SOFTWARE

REDEEMABLE AT STAND NO 3136
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£1

CASCADE GAMES

REDEEMABLE AT STAND NO 3005
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£2

ELITE SYSTEMS LTD.

REDEEMABLE AT STAND NO 1211
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£2

PSYGNOSIS

REDEEMABLE AT STAND NO 4127
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

10%

KEMPSTON MICRO ELECTRONICS

REDEEMABLE AT STAND NO 3126
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£1

CHEETAH MARKETING

REDEEMABLE AT STAND NO 3075
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

99p

OVERBACE LTD.

REDEEMABLE AT STAND NO 1907
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£2

SOFTEK INTERNATIONAL

REDEEMABLE AT STAND NO 1109
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£1

ADDICTIVE GAMES

REDEEMABLE AT STAND NO 1621
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£1

LLAMASOFT

REDEEMABLE AT STAND NO 3089
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£2

MIRRORSOFT

REDEEMABLE AT STAND NO 1611
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£2

MIRRORSOFT

REDEEMABLE AT STAND NO 1611
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£5

ROBTEK

REDEEMABLE AT STAND NO 1717
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£2

BRITANNIA SOFTWARE

REDEEMABLE AT STAND NO 1807
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£3

OCEAN

REDEEMABLE AT STAND NO 1411
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

£5

COMPUTER CONCEPTS

REDEEMABLE AT STAND NO 4104
ONLY AT THE PCW SHOW 1986

DISCOUNT VOUCHER FOR THE PCW SHOW — Your Computer

Free

MICRONET

REDEEMABLE AT STAND NO 3142
ONLY AT THE PCW SHOW 1986

SEE REVERSE OF COUPONS FOR COMPLETE DETAILS ON OFFERS

PRODUCT:
Any of Durell Software's current titles.

LIABILITY:
None.

PRODUCT:
Pub games. Commodore, Spectrum and Amstrad.
Pub games. Seven game compilation featuring Bar Billiards, Table Soccer, Darts, Dominoes, Pontoon, Poker, Skittles, on one tape or disc.

LIABILITY:
First 50 people.

PRODUCT:
Selected products.

LIABILITY:
While stocks last.

PRODUCT:
Graffics tablets and software.
For BBC, Amstrad, Commodore computers.

LIABILITY:
None.

PRODUCT:
Any product.
See our new range of products for the Amstrad, IBM, Spectrum and Commodore computers.

LIABILITY:
First 150 people

PRODUCT:
Brattacus, Deeo Space, Arena.
See our two new existing products: Day Space and Arena at the Psygnosis stand, no 4127.

LIABILITY:
None.

PRODUCT:
Paper Boy.
An officially licensed coin-op version from Atari.

LIABILITY:
None.

PRODUCT:
All software and joycestick interface.
Visit our stand to see a flight simulctor and save £1. Also Joycestick interface for Amstrad 8256.

LIABILITY:
None.

PRODUCT:
Kirel.
An unusual 3D arcade game available on Spectrum and Amstrad.

LIABILITY:
None.

PRODUCT:
Up to £2 off selected edge products while stocks last.

LIABILITY:
None.

PRODUCT:
Thingi.
If you miss us at the show order direct on 051 647 8981.

LIABILITY:
For first 100 visitors who produce this ticket.

PRODUCT:
125 Joystick.
As a special show offer, Cheetah are offering £1 off their 125 Joystick – U.K's top selling stick. Compatible with Spectrum, Commodore 64, Amstrad, Atari, MSX etc. Four fire buttons, auto fire, 12 months warranty. R.R.P. £8.95.

LIABILITY:
While stocks last.

PRODUCT:
£5 of R.R.P. Magic Disk Kit.
Commodore 1541/1570 disk drive. Remedy head alignment problems easily. Have speed test, alignment test and head cleaner.

LIABILITY:
While stocks last.

PRODUCT:
£2 off Action Reflex (Spectrum).
Crash: "This game has a really good feel about it that keeps you playing; there are lots of nice graphical touches which help . . .
a very playable and addictive game which I can recommend strongly. overall value 8890."

LIABILITY: None.

PRODUCT:
£2 off 811 – Combat (Spectrum and Amstrad).
Amstrad user: "The sound effects in this game are very good with a realistic squish when your stick makes contact with your opponent's eyeball . . . I think this is the best combat game of this genre that I've seen and you should all go out and buy it."

LIABILITY: None.

PRODUCT:
£1 off selected show games.

LIABILITY:
None.

PRODUCT:
With first year's subscription to Micronet and Prestel. Modem for BBC and Spectrum owners.
For all other micro owners £10 off their first quarter's subscription to Micronet.

LIABILITY:
None.

PRODUCT:
£5 off show price. Atari ST products.
Offers applies to back pack and fast Basic.

LIABILITY:
None.

PRODUCT:
£3 off Miam Vice computer game.
Join Crockett and Tubbs under cover in this actiuon packjed arcade-adventure. Encounter the world of low life dealers and slick business moguls and elicit contraband, as you gater evidence for the big bust.

LIABILITY: None.

PRODUCT:
£2 off R.R.P. The Britestik Joystick.
A revolutionary new hand-held micro-switched joystick with built-in rapid fire option.

LIABILITY:
While stocks last.

GUIDE TO THIS MONTH'S REVIEWS

AMSTRAD
Jack the Nipper
Room Ten
Trashman
Doppleganger
Storm

COMMODORE 64
Dragons Lair
Iridis Alpha
Knight Games
Freak Factory

COMMODORE 16
Frank Bruno
Droid One
Wimbledon
Robo Knight

SPECTRUM
Ace
Jack the Nipper
Rebelstar

BBC
Thrust

Software Shortlist

Each of the games reviewed in Software Shortlist has been reviewed extensively by our team of reviewers.
We do not include reviews of unfinished products in this section of *Your Computer;* they are the games you can buy now or in the near future.
See the Software News and Preview features for advance news of games being developed.

Soft Star

Watch for the *Your Computer* Soft Stars. They are awarded to games which, in our opinion, offer outstanding value.

JACK THE NIPPER

► *Various ● Gremlin ● Arcade Adventure ● Francis Jago ● £8.95*

As all good boys know, laws are made to be broken. Working on that basis, the latest Gremlin release, *Jack The Nipper,* is an anarchist's delight. You play Jack. He is tired of all his pathetically weedy friends and decides to have some real fun. Unlike most nappy-clad children, Jack's idea of fun is not playing tag; he likes causing as much grief and despair as possible and he has a great talent.

Jack The Nipper is set in the area round his home. Each house or shop is depicted differently and each contains different objects, collectable or otherwise.

Once the game has begun, Jack must first find his trusty peashooter, which thankfully is nearby. By shooting various people, including the dog, cat, mum, dad, and everything else which moves, you soon discover the naughtyometer.

As with many of the earlier arcade/adventures, you are scored by percentage. Each activity you manage to disrupt has a different degree of naughtiness and they all total to a final percentage.

On the other hand, making contact with any of the other characters, and especially those whose lives you have disrupted in one way or another, gives you a serious case of nappy rash, which eventually becomes terminal. When you have lost five lives your overall percentage is given, together with an evaluation of the game, which ranges from Weedy Wimp upwards.

GRAPHICS ●●●●●
SOUND ●●●●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●

Both the animation and graphics are excellent. All the characters are well-defined and all the objects are easily distinguishable. To add to the game, there are two secret platform games hidden inside, one of which is fiendishly difficult.

Once you have appreciated the idea, everything about the game falls into place. No longer do you just smash things? No, nothing is too disruptive for Jack, as the police soon discover. This brings out the worst in every wonderful child – or adult.

FRANK BRUNO'S BOXING

► *C16/Plus 4 ● Elite ● Simulation ● Ian Nicol ● £7.95*

During its conversion to the C16 and Plus 4, *Frank Bruno's Boxing* has lost none of its original charm cr appeal and still remains one of the best boxing simulations available.

You are in control of the immense power of Bruno as he attempts to punch, dodge and weave his way past three oponents, beating each one at light, middle and heavyweight before moving to the next on his way to winning the world championship.

Each of his opponents has a different fighting style and is supposedly more intelligent than the previous one. First is the Canadian Crusher, the kind of man who eats lumberjacks for breakfast, chain saws and all. Beating him pits you against the martial arts expert, Fling Long Chop, a fast, powerful man who eats noodles for breakfast. Should you survive his onslaught, Bruno will face the terrifying Andra Puncheredov. He does not eat breakfast.

The data for Long Chop and Puncheredov is stored on tape. After Bruno has beaten the Crusher in all three weight divisions, he is given a secret code to enable the others to be loaded. That means you cannot cheat and go straight to the final; you have to earn your place by beating all the other contenders, like the real thing.

Controlling the action is complicated; a joystick cannot be used and eight keys are needed to move Bruno. As each fight progresses, a meter displays the opponent's energy level. When that drops to zero, a flashing sign prompts you to try a knockout punch. To win Bruno must knock down his opponent three times.

GRAPHICS ● ● ● ● ●
SOUND ● ●
PLAYABILITY ● ● ● ●
VALUE FOR MONEY ● ● ● ●
OVERALL ● ● ● ●

The only slight disappointment is the sound. There is no incidental music and the sounds produced as the gloves connect would be more at home in an episode of *Batman* than this game. Other than that, the only thing missing from this superb simulation is the seemingly ever-present commentary of Harry Carpenter.

KNIGHT GAMES

► *C64/Amstrad ● English ● Arcade ● Francis Jago ● £9*

As with *Elektraglide*, the previous English Software game, *Knight Games* is a excellent idea, with flaws. Fans of sports simulations such as *Hyper Sports* will recognise the scenario instantly but not necessarily the events.

Set in the middle ages, Knight Games has eight events, each of which involves mastering skills not seen previously on a micrc. If you can imagine a cross between *International Karate* and *Summer Games*, with armour, that is Knight Games.

GRAPHICS ● ● ● ●
SOUND ● ● ● ● ●
PLAYABILITY ● ● ●
VALUE FOR MONEY ● ● ●
OVERALL ● ● ●

What Knight Games lacks is the feeling of playability with games where skill is needed. In six of the eight events, the most effective policy is to move the joystick as fast as possible, not worrying about who or what is hit.

To get the most from Knight Games it is necessary to play against someone, not the computer, and even then, six of the eight events are relatively similar. One very redeeming feature is the sound. Knight Games features eight of the best soundtracks yet for the Commodore 64.

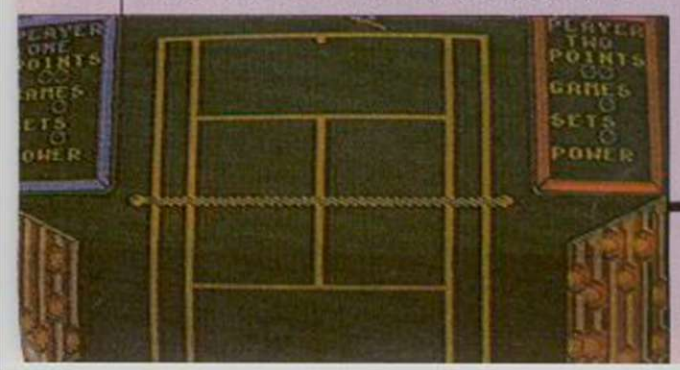
For dedicated fans of Kung Fu/Sports games, Knight Games will undoubtedly provide hours of fun; on the other hand it is unlikely that anyone else could justify the price.

WIMBLEDON

► *C16/Plus 4 ● Gremlin ● Simulation ● Ian Nicol ● £7.95*

GRAPHICS ● ● ● ●
SOUND ● ●
PLAYABILITY ● ● ●
VALUE FOR MONEY ● ● ●
OVERALL ● ● ●

Just when you thought that we had got rid of the tennis for another year; just when you thought it was safe to walk into a sports shop with no danger of having a salesman thrust the latest racquet up your nose, Gremlin has released *Wimbledon*. There is no need, however, to rummage in a cupboard for your designer shorts, socks and wristbands for now, even in the dead of night, sitting in a comfortable armchair with a bottle of barley water, you can still enjoy all the thrills and spills of tennis.



Before the game begins, an options menu is displayed. You can adjust the level of difficulty, the number of sets needed to win, the game speed or the number of players. In this simple-to-play simulation, the action is shown from a birds-eye view of the court. Shots are selected automatically in relation to the player's position compared to that of the ball and, by holding down the fire button, you can determine how hard the ball is hit and where on the court it lands. So, with a little practice using a combination of delicate control and appropriate positioning, it is possible to outwit the opponent and win the championship. The wide variety of skill settings means that even when you have conquered one level, more challenges await you.

The graphics are very impressive, worthy of a machine with a memory far greater than that of the C16 but, once again, the sound suffers as a result. The game is great value and, being almost as addictive as the rea thing, it is bound to be popular with many C16 and Plus 4 owners.

THRUST

► *BBC ● Superior ● Arcade ● Francis Jago ● £7.95*

It is not often that budget games are converted from the BBC and it is even rarer that they are then released at full price. *Thrust* is just such a game. Starting as a Firebird Silver range game, it was such a hit that Superior Software bought the BBC rights and has now released it.

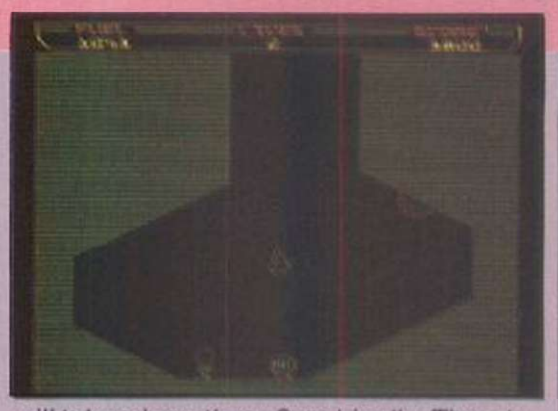
In many ways Thrust was a surprise hit. Based on a really early arcade game, *Gravitar*, it had no fancy graphics or sound – just an amazing degree of addictiveness.

For youngsters who never played Gavitar, it was an asteroid-type game, in which your spacecraft must fly to the bottom of various mazes, collect the Klystron pods, and then fly back to the surface. Unfortunately, the pods are connected umbilically to you and are very heavy.

Flying through the maze is complicated further by the occasional missile base, which must be shot. BBC gamesters used to meteors will find the keys very easy to learn, although the feeling of gravity will be, to say the least, disturbing.

Superior Software has set up a competition for everyone who gets past the 24th, 48th and 72nd levels but that will take a long time. Graphically, Thrust is well-suited to the BBC but there is nothing at which to marvel.

GRAPHICS ●●●●
SOUND ●●●
PLAYABILITY ●●●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●●



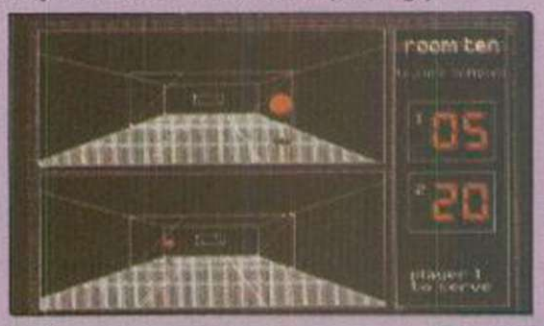
Where Thrust stands out from almost all other games is during play. It is a game which, like most arcade games, requires practice but when you finish the Xth screen it is vastly rewarding. Dedicated BBC games fans would do well not to miss this one; it is bound to be remembered as a classic.

ROOM TEN

► *Amstrad ● CRL ● Arcade ● Francis Jago ● £8.95*

Tau Ceti was without doubt one of the best games designed originally for the Amstrad. Programmed by Peter Cooke, it combined spectacular graphics with strategy to produce a game which made *Elite* look poor in comparison.

With *Room Ten*, his latest game, Cooke has stretched a simple idea way beyond its limits and surprisingly produced another great game. Room Ten is based on *Pong*.



Instead of the original, two-dimensional overview, Room Ten is a split-screen, three-dimensional game. Each player controls a transparent bat with which he must prevent a ball hitting his back wall. The two views show the ball from the viewpoint of the player and the opponent, with player one controlling the top half of the screen.

GRAPHICS ●●●●●
SOUND ●●●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●

To make the game more complicated, the room has gravity and angles are reflected extremely accurately. Each time a player manages to hit his opponent's back wall, five points are scored with the winner being the first player to reach 35 points.

Using three-dimensional vector graphics, Room Ten manages to create an eerie sense of reality.

As well as being able to play against a human opponent, Room Ten permits competition against the computer at various levels, from relatively slow, and therefore simple, to fast and extremely difficult.

Recommending Room Ten is easy. It is simple to learn, yet difficult to master, and is another must for Amstrad owners.

ACE

► *Spectrum ● Cascade ● Simulation ● Francis Jago ● £9.95*

Spectrum owners have scarcely been deprived of high-quality simulations. Games such as *Tomahawk* and *Turbo Esprit* have managed to capture the imagination of more than just avid simulations players. Mainly that was because they managed to involve the player.

In *Ace*, a recent conversion from the Commodore 64, Cascade has managed to create one of the few flight simulators which is truly enjoyable to play, either for a few minutes or a few hours.

As is normal with games of this kind, the Ace scenario involves saving the world from all kinds of evil marauders but what makes Ace more than just a flight simulator is that you must shoot a variety of enemies while retaining complete control of your All Weather All Terrain (AWAT) jet.

One criticism levelled at Ace is the inclusion of a Lenslok protection system. However clever the system is, it is also difficult to use and as such should be avoided if possible.

Having chosen the mission on which you wish to embark and whether or not you will be using a weapons man, you set out on a series of sorties which permit you gradually to improve your flying skills as you progress through the levels.

GRAPHICS ●●●●
SOUND ●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●

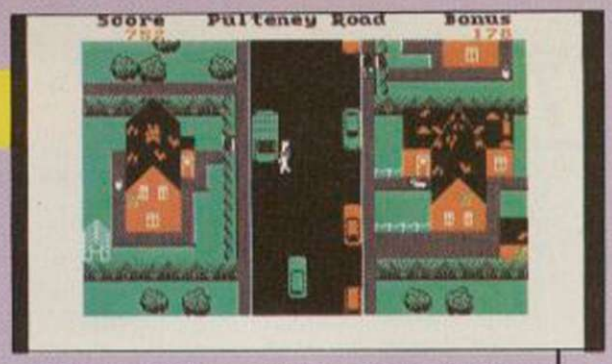
The AWAT control panel occupies most of the lower half of the screen, with an assortment of dials and radars, while the upper half of the screen acts as a window on the action. To make playing Ace easier, pressing M reveals a map of the coastline you are defending, highlighting both your aircraft and, more important, the enemy.

Ace represents something new. It is a simulation to appeal to arcade addicts as well. This combination is refreshingly novel, especially for Spectrum owners, and as such it deserves to be a hit.

SOFTWARE SHORTLIST

TRASHMAN

► *Amstrad ● New Generation ● Arcade ● Francis Jago ● £7.95*



Have you ever fancied being a *Trashman?* If the answer is yes, this release from New Generation, the first after its recent sale to Virgin, gives you the chance. Whether a chance you will want to take is another matter.

Released originally for the Spectrum more than a year ago, Trashman received almost endless praise but this conversion leaves a great deal to be desired.

Trashman is a one- or two-player game which involves travelling up and down various streets, collecting a specified amount of bins within the time limit. To keep up your time limit and consequently earn a bigger bonus, extra jobs, such as calming distraught housewives, can be performed.

Life, however, is not all a bed of roses. If, while controlling the trashman, you tread on the grass of a home, it is likely that a dog will charge out and chew a few limbs. Injuries such as that and being hit by bicycles slow movement considerably. Another major hazard is crossing the road to reach more houses; collision with a car is terminal.

GRAPHICS ● ●
SOUND ● ●
PLAYABILITY ● ● ●
VALUE FOR MONEY ● ●
OVERALL ● ●

Where Trashman fails, and indeed where a number of games by Virgin fail, is not the idea but the execution. As a machine, the Amstrad is much more powerful than the Spectrum, yet Trashman fails to make the most of any of the Amstrad features. Neither the graphics nor the sound are better than the Spectrum version and that is a pity.

Whatever its failings on the Amstrad, Trashman is still a highly-enjoyable game. It combines a really good idea with a witty storyline but unfortunately results in an extremely disappointing finished product.

DRAGON'S LAIR

► *C64 ● Software Projects ● Arcade ● Francis Jago ● £9.95*

Not very long ago, in a not very magical time, *Dragon's Lair* ruled the arcades. The game was the first to use videodisc projection and, using those techniques, had the most cartoon-like graphics and animation ever seen.

It was because the graphics and sound were so incredible that most people doubted Dragon's Lair would ever make it to the home computer. Software Projects, however, has accepted the challenge and produced a version of Dragon's Lair, first for the Commodore 64 and shortly for the Amstrad and Spectrum.

Set in the past, where knights were knights and everyone loved them for it, you take control of Dirk the Daring, King Aethelred's most daring and accomplished knight. It is Dirk's task to rescue Princess Daphne, the king's only child who has been abducted by the Singe, an mean and evil dragon.

Dragon's Lair is an amazing piece of technical software. Software Projects has managed to create an amazingly good replica of the arcade game, even down to the detailed graphics and large characters.

To get all of the game on to cassette, a new and innovative loading system has been used which allows the loading of the next section of the game while the previous section is being played. In practice, that system is excellent and permits a great deal more game to be included without having to wait for laborious multi-part loading.

GRAPHICS ● ● ● ● ●
SOUND ● ● ● ●
PLAYABILITY ● ● ● ●
VALUE FOR MONEY ● ● ● ●
OVERALL ● ● ● ● ●

Each level involves defeating various evil beings, varying from Air-Genies to Spectres and, in the final screen, Singe. Dragon's Lair is without doubt the best game Software Projects has released since *Jet Set Willy*. It combines spectacular use of the Commodore graphics with fun and imaginative music. In many ways Dragon's Lair is the best arcade conversion yet.

IRIDIS ALPHA

► *C64 ● Hewson/Llamasoft ● Shoot-'em-up ● Francis Jago ● £8.95*

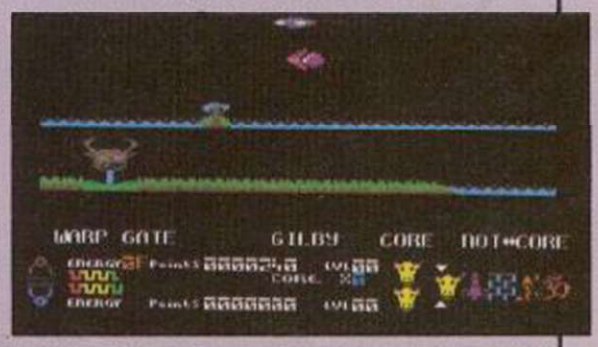
Only recently have pure shoot-'em-ups become less than trendy. There was a time when a game that consisted of nothing except unadulterated blasting would have been an instant hit. Now, for a game to be successful it must either be an arcade conversion, or have three-dimensional graphics and a Rob Hubbard sound-track.

GRAPHICS ● ● ● ●
SOUND ● ● ● ●
PLAYABILITY ● ● ● ● ●
VALUE FOR MONEY ● ● ● ●
OVERALL ● ● ● ● ●

If one person can go a long way towards changing all this it must be Jeff Minter, the enigmatic programmer behind Llamasoft. Although his last release, Battalyx, was not the hit it deserved to be, Iridis Alpha, his first game for the Llamasoft/Hewson label, should reinstate him as the master blaster.

Both the graphics and the sound suit Iridis perfectly, and the scrolling has to be seen to be believed – although master Minter promises it can go much faster!

Games fans who have been starved of a good blast since Uridium will breathe a sigh of relief when they see Iridis Alpha. It is Jeff Minter at his all-time best, great fun and madly addictive!



Your COMPUTER

The 9th Personal Computer World Show

3-7 SEPTEMBER 1986
OLYMPIA LONDON

PREVIEW

The Personal Computer World Show is undoubtedly the biggest event in the computing calendar. The 1985 Show played host to more than 72,000 visitors from all over the country and many from overseas. At least as many are expected this year, making the Show an event not to be missed. We spoke to some of the companies due to exhibit to discover their plans.

Activision

Will be unveiling a new strategy game, *Hacker 2 – The Doomsday Papers*, which will be released in multiple format for all the popular home micros. *Moonmist* will also be previewed at the show. This tongue-in-cheek spoof of early-30s sci-fi comics involves a leather goddess who attempts to convert the earth into her pleasure planet.

Acorn

The Acorn flagship, the BBC Master Series, will be on display, as will the recently-released Acorn M19. This MS-DOS PC clone is aimed at the educational market in response to requests for such a machine but Acorn is sure many business buyers will also be interested. Plenty of new games and software packages will be released with a view to catching the Christmas market.

Addictive Games

Will display its new range of products, including *Arak* for the Commodore 64, *Kirel* for the Spectrum and *Head Coach*, a strategy game based on American football. The Show will also be used as a launch vehicle for *President*, the latest strategy game by Kevin Toms, author of *Football Manager*.

Advance Memory Systems

Exhibiting the AMX mouse and art package for Amstrad, Spectrum and BBC computers. A new mouse and software package is also planned for the Amstrad PCW8256. For the Atari 520ST, *Finesse*, a desk-top management package, is due to be launched and Advance hopes to release a conversion for the Commodore 64 in the rear future.

Alligata

The long-awaited *Pub Games* will be on display at the show. This combination of darts, bar billiards, poker and other games in expected to be a major hit. *Sirus 2* will be shown for the Spectrum and the new arcade game *Kettle* will be previewed for Amstrad and Commodore machines. Alligata also plans a fast-action arcade game for the Amstrad PCW8256.

Amstrad

Rumours of the long-awaited Amstrad PC clone, for the moment, remain rumours. Amstrad is unwilling to give an advance date for when the machine will be ready but, considering the large number of other low-cost compatibles which will be launched at about the same time, it seems likely that the Amstrad machine will appear at the show, if not slightly earlier. One certainty is that the equally long-awaited Sinclair-Amstrad machine will be at the show. It will have 128K of memory and be based on a Spectrum but with a built-in data recorder. The retail price is to be £149. A full range of products for CPC and PCW machines will also be featured.

American Research Corporation

This company, well-known for its ARC Turbo PC-compatible in the business world, has produced a portable version of this successful machine and reduced the price to a more affordable £475. It features five expansion ports, 256K of memory as standard and a single 360K floppy disc drive. The new machine is expected to have a very wide appeal and is being called The World PC.

Atari

Will surely have one of the most spectacular stands of the Show. More than 1,000 sq. ft. has been allocated to what will be known as the Atari Village. More than 70 software companies will have stands in the village and will be demonstrating all the latest products, games and utilities for the Atari range of computers. Although all machines in the Atari range will be covered, there is expected to be heavy emphasis on new products for the ST. The purpose of the project is to show Atari computers in action, whether in education, industry or entertainment.

Beyond Software

Attention all *Star Trek* fans. To coincide with the one of the world's most popular television serials, Beyond Software is releasing the computer game version of the series for Atari, Commodore, Spectrum and Amstrad computers. *Dark Scepte*, *Dante's Inferno* and *Infodroid* will all be released on the C64 with conversions to Amstrad and Spectrum machines to follow.

Boot Out

Remainder – that is out-of-date software – will form a large portion of the products on the stand. The prices will be very low and there are expected to be some books and hardware as well, also at greatly-reduced prices. Boot Out will also be offering a laser-printing service and demonstrating its new desk-top publishing kit.

Britannia Software Ltd

Dempsey and Makepeace, a new arcade adventure game, will be released for the Amstrad computer with a Spectrum conversion to follow. Following the success of the Romplus cartridge, a new version with 15 sockets will be launched. A cartridge-based spreadsheet for Amstrad machines is hoped to be completed in time for the show.

Bubblebus

Will be launching its latest games software. The new titles include *Ice Temple* for the Spectrum, *Moonlight Madness*

also for the Spectrum, and a conversion of *Star Quake* for Atari and MSX machines. Two shoot-'em-up games for the C16, *Trizons* and *Tazz* will also be on display. A demonstration of *Supernes*, the successful database for newsagents, is also planned.

CDS

Following the huge and unexpected success of *Colossus 4 Chess*, CDS will be launching *Colossus 4 Bridge*, initially on Amstrad and Spectrum machines with further conversions to follow. The game is being marketed as a complete bridge package with the successful book, *Begin Bridge*, being included in the price. Many new titles, under the budget label Blue Riband, are also planned for the show.

Cheetah Marketing

As well as the Speedrum and Amdrum kits which will be on display, Mach One, a new microswitch joystick will be seen for the first time. It features four fire buttons, a metal shaft and an auto-fire selector as standard. In addition, new sound samplers, musical keyboards and Midi interfaces will be launched for Amstrad and Spectrum computers.

Connexions

Connexions manufactures cables and interfaces for a wide range of computers but concentrates mainly on the IBM PC and its clones. It claims to be able to connect any peripheral to any computer. A full range of products, plus a few new additions to the range, will be on display.

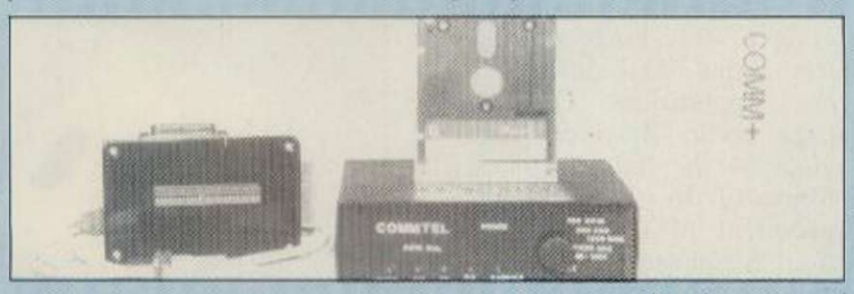
Columbia Computer Products

This company is responsible for the U.K. sales and marketing of Columbia, the largest independent British ribbon manufacturing company. At the show it will display disc kit boxes, screen filters and computer cleaning kits. A new monitor stand, aimed at the home and business user, able to turn 360 degrees and tilt up to 12.5 degrees will be launched.

The full range of ribbons will also be display, many at specially-reduced Show prices.

Commtel

Will demonstrate its range of internal and external modems for the Amstrad PCW range. A modem package for IBM compatibles is also expected to be on display. Wordstream, a Bournemouth-based typesetter, may also be on the stand. Its customers use a system of code-embedded ASCII files which are then sent to Wordstream either via a modem or on disc, to produce finished typesetting at a very low cost and in a short time. Commtel is also hoping to release a low-cost diasywheel printer.



Computers Unlimited

Specialises in Apple Macintosh computers. The stand will feature a complete kit for desk-top publishing which includes the Apple Laserwriter. New products due to be launched include a 2MB upgrade kit for the Macintosh +. The company is also hoping to launch new products now on display at the Boston Apple Show in the States.

Computer Bookshops

Books and manuals for all the best-known business machines will be on display. *Top View*, *WordStar*, *dBase 3*, *Desk-Top Publishing* and *Lotus 1-2-3* are a few of the subjects to be covered. There will also be a shelf containing damaged and shop-soiled books for those with an eye for a bargain.

Computer Manuals

This subsidiary of Computer Bookshops will be displaying a range of manuals and books for the complete range of Amstrad PCW and CPC, Sinclair Spectrums and QLs, Commodore and BBC machines. Instruction for languages from Basic to Pascal and operating systems from Appledos through C/PM to Xenix will also be available.

CRL

Cyborg, an arcade adventure, will be previewed on the Commodore 64 machine at the Show. Twenty monitors will show various stages of the game which is due to be released shortly after the Show. The plot revolves round a group of scientists who attempt to save earth from total destruction by an asteroid which is on a collision course. When contact with the boffins is lost, Cyborg is sent to find and rescue them. There are, however, many obstacles and dangers which he must overcome before he can succeed. Conversions for Amstrad and Spectrum machines are hoped to follow closely the release of the Commodore version of the game.

CRL Group Ltd

Produces a wide range of dust covers for most makes of printer and computer. At the show its latest product will be on display, a new range of padded carrying cases designed to make your non-portable micro portable.

Cumana

A new range of disc drives for BBC and Atari computers will be some of the items on display at the Cumana stand. An upgrade kit for the BBC model B providing 0.5MB of RAM and additional graphics will also be shown. Interfaces and peripherals capable of reading the Astron card, a credit card-sized ROM, will be launched for BBC, Amstrad and IBM machines.

Domark

The Amstrad version of the recently-renamed *Split Personalities* will be available. The much-talked-about *Trivial Pursuits* will be released for Commodore, Spectrum, Amstrad and BBC machines. A Commodore conversion of a more recent release, *Gladiator*, will make its first public appearance and a sequel to *Eureka* will be released for Amstrad, Commodore and Spectrum computers.

Direct Disc Supplies Ltd

Now in its third year of trading, Direct Disc is hoping to make a big impact at the show. As the name implies, the company specialises in discs, mainly 5.25in. and 3.25in. floppies, offering a lifetime warranty and duplication with copy protection if required. In addition, a range of magnetic media products will be available.

Direct Technology

Will be unveiling the world's first software robot. This PC-

compatible program can be used to teach users how to operate a program. It can detect errors and is therefore expected to be very popular in the educational and computer-based training markets. Examples of programs running with the robot will be on display. A surprise announcement will also be made.

Duckworth Publishing

A large range of books and software for a number of computers will be available. The show is to be used as a launch vehicle for a new book, *Further Adventures on the 64*, a guide to advanced programming for Commodore 64 owners written by Peter Gerrard and costing £6.95.

Durell Software

Many new releases are planned but only two are expected to be ready in time for the show. The first is *Thanatos*, an arcade adventure written by Mike Richardson, author of the best-selling *Turbo Esprit*. It involves taking control of a dragon whose eternal destiny lies in conflict with Eros the life-giver. Thanatos will be previewed on the Spectrum. The second of the two releases is called *Chain Reaction*. This arcade game involves saving a sabotaged nuclear power station from destruction. It will be previewed on the Commodore 64.

Elite Systems

Will be exhibiting up to six new products including *Scooby Doo* for Amstrad and Spectrum computers. A new budget range of £2.99 classics will also be released and many game conversions are expected.

Encyclopedia Britannica

The latest edition of *Britannica* was published last year and will dominate the stand. Having increased the number of volumes from 30 to 32 and having introduced a data annuual which can be bought each year to keep the volumes up-to-date, the company is hoping this edition will last well into the 21st century. Encyclopedia Britannica is hoping that many people will take the opportunity to visit the stand and discover more about the books and the way in which they are made. In addition to Britannica, many other books will be on display.

First Publishing

This Pangbourne-based distributor of software and books for home and business micro markets is launching a new magazine at the show. As yet untitled, many pages will be in full colour with others in two colours. It will cover software and books only, with an editorial mix of news, reviews of new products and in-depth feature articles.

Gemini Marketing

Is launching a new newspaper. Aimed at the end-user, it will be distributed via a national network of advisory centres. It will cost 50 pence and most of the stories will have a definite Gemini bias, with 40 percent of the magazine dedicated to Gemini computer news.

Glentop Publishers

Much of the stand will be dedicated to books on word processing with the Amstrad 8256 and 8512 machines. A new series of books for the Atari ST covering a wide range of topics from using databases to business applications. One 500-page book, *Advanced users' guide to the Atari ST*, has a foreword by Jack Tramiel, president of Atari Corporation. A full range of books for Commodore, Spectrum and BBC machines will be on display.

Gremlin Graphics

Using the show to launch several new games. They include *Trailblazer* and *Avenger*, a follow-up to the successful *Way of the Tiger*. *Future Knight*, one of the new trend of blast-ventures, will also be previewed, as will *Footballer of the Year*, a strategic football simulation.

Haba

Will have two stands. The first, in the Atari area, will show a new word processor which works in a windowing environment. The other will display a new desk-top publishing kit. A range of business programs such as *Mailmerge* and *Spellcheckers* will also be shown, as will a video digitiser and flight simulator for the ST.

Hewson

Iridium, the popular C64 game, will be released on the 48K Spectrum. *Alleykat*, a shoot-'em-up arcade adventure and *City Slicker* will be also be released, on Spectrum and Amstrad CPC machines. Another new title, *Firelord*, will be shown for the Commodore, Amstrad and Spectrum.

Interceptor

The stand will be split into several sections, of which only a small part will be occupied by Interceptor products. A good deal of the space will be devoted to a new budget software label which is being launched. The other main release is a text adventure which includes sequences of animated graphics. Based on the aftermath of an earthquake, the game is called *Aftershock*.

Kempston

Plans to concentrate more on the IBM and small business market and much of the stand will be devoted to promoting the new IBM mouse and interface package. A full range of products for home computers will also be shown. It will include many joysticks, interfaces and mice for Amstrad and Spectrum computers. Owners of the Amstrad PCW machine should be interested in a new joystick and interface package for the 8256 and 8512 machines which is to be launched at a price of £29.95.

Level 9

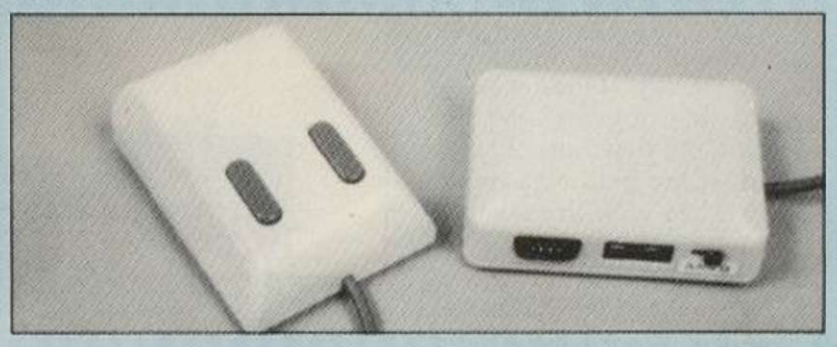
Will celebrate its fifth anniversary by displaying many of its earlier products. The stand will be based on a small museum, tracing the history of the company from early days to its present status. A Nascom, one of the first home computers, will be run next to an Amiga to show the advances in computer technology which have been made in recent years. Preview videos of new, as yet incomplete games, will be running.

Lightning Distribution

The complete product range will be on display. It will include Amstrad PCW machines, 128K Spectrums and Star printers. Demonstrations of the Casio range of musical keyboards are planned and the company hopes to launch one or two new products.

Linear Graphics Ltd

A low-cost professional graphics plotter, launched originally at the Acorn User Show, will be on display. Aimed at educational and industrial markets, the A3M is fully-compatible with the BBC microcomputer using the same set of graphics commands to move the plotting pen. An A4 desk-top version will also be shown.



Mastertronics

The main show launch for this successful budget software house will be *Flash Gordon*, the game version of the '50s science fiction serial. Because of the complexity of the program, it will be available initially only in a multiple-load format for the Commodore 64. Conversions to other machines are expected to follow in the near future. Many new products for Atari ST machines, brought recently from the U.S., will be shown.

MacMillan Publishers

A new software title, *Piranha*, will be seen for the first time. Five new games are also planned, one a licence from a forthcoming television program. The others are *Rouge Trooper*, a game based on the comic hero; *Nosseratu the Vampyre; Strike Force Cobra*, a graphic adventure incorporating digitised photographs of the games programmers; and *The Colour of Magic*, a new text adventure.

Micronet 800

A new telesoftware package, launched in August, will be publicised at the show. Micronet will also be promoting its offer of a free modem for all BBC and Spectrum owners on becoming a subscriber to the computer-orientated database.

Micro Media

Manufactures a large number of products for many home and business computers. A wide range of products from discs and ribbons to printer and monitor stands will be on display. There are expected to be some new additions to the range launched at the Show.

Micro Processor Engineering

Workworth, a new Forth programming utility, will be released for Amstrad, Atari, and PC-compatible computers. The Amstrad version costs £35 and runs on computers in the CPC range and incorporates a full editor and the ability to run compilers.

Modem House

A new as yet unmaned modem will be unveiled. It will feature auto-answer and auto-dial as standard and be fully software-controlled. A multi-speed facility allows it to support a number of baud rates, including V21, 22 and 23. Although no specific details of the machine are available, it will be Hayes-compatible and in direct competition with the Quattro but costing less than £300.

Neutral Ltd

A point-of-sale terminal will be launched. Aimed at large retail companies, it will allow a customer's bank account be debited instantly at the time of buying goods. That would greatly reduce the amount of paperwork involved in such a transaction and also decrease the time spent waiting to pay for goods.

Newstar

Will be concentrating on PC-compatible products. A new range of software should be launched. It will include *Newfile*, the first database to operate under a memory-resident system which simulates a multi-tasking environment. *Cracker*, a high-resolution graphics spreadsheet, also memory-resident, will also be on display.

Opus

Set to launch a four-model range of PC Turbo compatibles with a starting price of £499. The machines feature the ability to expand the internal memory up to 1MB, thus creating a RAM disc. They are built to full U.K. specifications with pound signs on the keyboard. The range, called the PC2, is expected to sell well in business, educational and the home market.

Palace Software

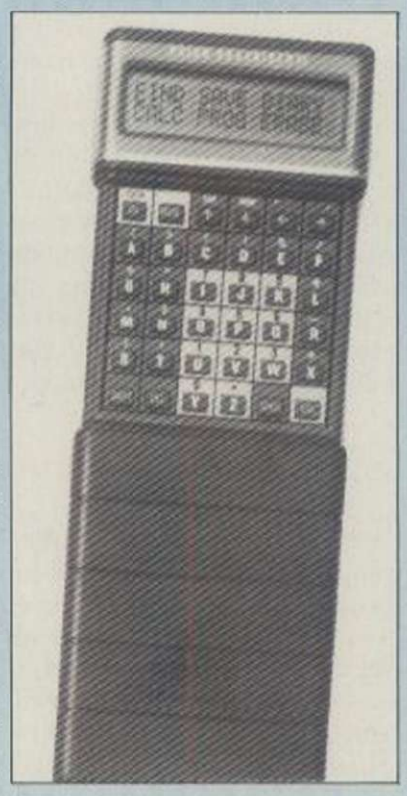
Hoping to follow the success of its two recent hit games, *Cauldron* and *Cauldron II*, Palace Software will be releasing a new visual arcade adventure, *The Sacred Armour of Antirad*. It will be launched initially on Commodore and Spectrum machines with a conversion for the Amstrad CPC range to follow later in the year.

Phillips Electronics

The popular range of medium-resolution colour and monochrome monitors, compatible with most makes of home and business computers, will be demonstrated and a new high-resolution colour model is due to be launched.

Prospero

The simultaneous U.K. and Japanese launch of Pro Fortran 77, a much-demanded and long-awaited compiler for the IBM PC will be released. Versions for the Sinclair QL and the Atari ST will also be on display and many other packages, including the Pro Pascal compiler, will also be shown.



Psion

A new chess program for the IBM PC and its clones will be on display. The best-selling pocket peripheral, the Organiser II, will also be on show, along with the range of expansion and utility packages which exist for it. Other new business software for PC compatibles will be demonstrated.

Rainbird Software

Part of the British Telecom information technology group, Rainbird forms the leading edge of BT software development. Many of its products are produced for Atari and Amiga machines and many are later converted to smaller machines. *Starglider* will be released for the ST and conversions to the C64, Spectrum and Amstrad will follow later in the year. *The Pawn*, the much-acclaimed text and graphics adventure, released originally on the ST, has now been converted to the C64 and is expected to be very popular. Finally, *Tracker*, a war-gaming simulation, will be previewed. Rainbird hopes that it will have a more wide-ranging appeal than most other war games.

Research Machines

A multi-user, multi-tasking, desk-top publishing kit using a window operating environment will be demonstrated on the Nimbus machine. Two new laser printers, one capable of producing litho-like quality, will be shown. An interactive video system for the Nimbus which allows the mixing of video images and computer-generated graphics on-screen will be making an appearance.

Robtek

Will be continuing its budget range of business software for the C16. It includes a database, word processor and spreadsheet which will all cost £4.95 and the programs will be available shortly on other machines. *Filemaster*, a database using a windowing environment similar to the ST, will be making an appearance and two programs for the Atari, one a utilities toolkit and the other a time clock, will be released, each at £29.95.

Romantic Robot

Multiface II for the Amstrad CPC range will be launched officially at the Show. Several new games are also due to be on display, the major release being *Never Mind The Nasties*, a combination of a maze, platform and arcade adventure.

Spectravideo

The public launch of the Quickshot Turbo joystick will be a major event. The new model uses the same styling as its popular predecessor, the Quickshot 2, but uses directional microswitches to give improved control.

Spectrum

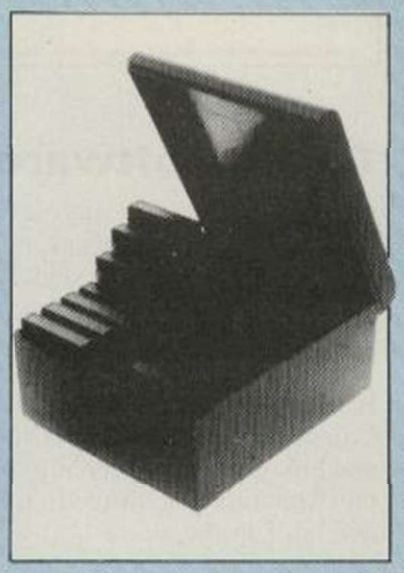
Will be featuring a new range of imported Bondwell PC compatibles. Prices begin at £599 for a 256K single-disc-drive model and rise to £999 for a 20MB hard disc model. In addition, a full range of products for most popular home computers will be on display.

Tasman

New products will include a spelling checker program for the Amstrad PCW machines. Many others are planned but, as yet, the company is unsure which will be ready in time for the show.

Times Computer Services Ltd

This rapidly-expanding company deals with the recruitment of computer personnel, full-time and part-time, on a contractual basis. The company will be showing other companies the type of service it can offer.



Transform

One of the few stands where you will be able to buy Microdrive cartridges. In addition to this sometimes rare commodity, storage boxes for Microdrives and 3in. discs will be shown. A new integrated accounts package for the QL is due to be unveiled.

Tynesoft

A package of four games on one disc for PCW machine will be one of the main attractions. Featuring classic games such as *Pac Man* and *Apace Invaders*, it will be offered at an extremely low price. A conversion of *Winter Olympics* to MSX machines and of *Who Dares Wins* for the C16 will be featured and *Jet Set Willy* for the Atari ST will be on display. A new multi-screen arcade adventure for the Amstrad will be previewed.

Videk

Videk manufactures a wide range of cables, connections and piece parts such as DIN plugs and sockets. It produces those items to fit almost all home and business computers and the stand will have a selection of the products on display.

W H S Distribution

Books and manuals from Osborne and Kingfisher, covering a range of topics on most popular home computers, will be on display. Two new games from Mosaic Software will also be displayed. The first, *The Growing Pains of Adrian Mole*, is a follow-up to the successful computer game version of *The Secret Diary of Adrian Mole*, released last year. The second, *The Archers*, is based on the long-running radio series.

ADDRESS BOOK

Activision U.K. Ltd
31 Carlton Crescent
Southampton
Hampshire
SO1 2EW
01-431 1101

Acorn Computers Ltd
Fulborn Road
Cherry Hinton
Cambridge
CB1 4JN
0223 245200

Addictive Games Ltd
Albert House
10 Albert Road
Bournemouth
Dorset
0202 296404

Advance Memory Systems
166-170 Wilderspool Causeway
Warrington
WA4 6QA
0925 413504

Alligata Software Ltd
1 Orange Street
Sheffield
South Yorks
S1 4DW
0742 755796

American Research Corporation
160b Handcroft Road
Croydon
Surrey
CR0 3LE
01-684 4144

Amstrad
Brentwood House
169 Kings Road
Brentwood
Essex
CM14 4EF
0277 228888

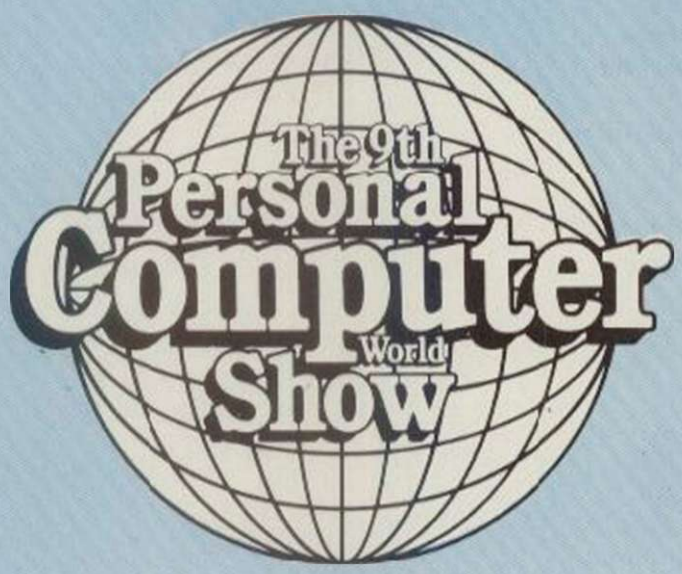
Atari Corporation (U.K.) Ltd
Atari House
Railway Terrace
Slough
Berkshire
SL2 5BZ
0753 33344

Beyond Software
Wellington House
Upper St Martins Lane
London WC2
01-240 9350

Boot Out
PO Box 147
Putney
London
SW15 1AU
01-788 1454

Britannia Software
Units 25-27
Cardiff Workshops
Lewis Road
Cardiff
0222 481135

Bubblebus
87 High Street
Tonbridge
Kent
TN9 1RX
0732 355962



Cheetah Marketing Ltd
1 Willowbrook Science Park
Crickhowell Road
St Mellons
Cardiff
CF3 0LF
0222 777337

CJE Microcomputers
78 Brighton Road
Worthing
West Sussex
BN11 2EN
0903 213900

Columbia Computers
Unit 5, Croydon Road Ind. Est.
Tannery Close
Beckenham
Kent
01-656 8233

Computers Unlimited
246 Regents Park Road
London N3 3HP
01-349 2395

Computer Bookshops
30 Lincoln Road
Olton
Birmingham
B27 6PA
021 707 7544

Computer Concepts
Gaddesden Place
Hemel Hempstead
Herts
HP2 6EX
0442 63933

Connexions
125 East Barnet Road
New Barnet
Herts
EN4 8RF
01-441 1282

CRL Group plc
9 Kings Yard
Carpenters Road
London
E15 2HD
01-533 2918

Cumana Ltd
The Pines Trad. Est.
Broad Street
Guildford
Surrey
GU3 3BH
0483 503121

Direct Technology
Grove House
551 London Road
Isleworth
Middlesex
TW7 4DS
01-847 1666

Domark Ltd
204 Worple Road
London
SW14 8PN
01-947 5622

Durell Software Ltd
Castle Lodge
Castle Green
Taunton
Somerset
TA1 4AB
0823 54489

Easi-Bind International
Adams Close
Heanor
Derbyshire
DE7 7GX
0773 761341

Elite Systems
Anchor House. Anchor Road
Aldridge
Walsall
West Midlands
WS9 8PW
0922 55852

Encyclopaedia Britannica
Mappin House
4 Winsley Street
London
W1N 8EB
01-637 3371

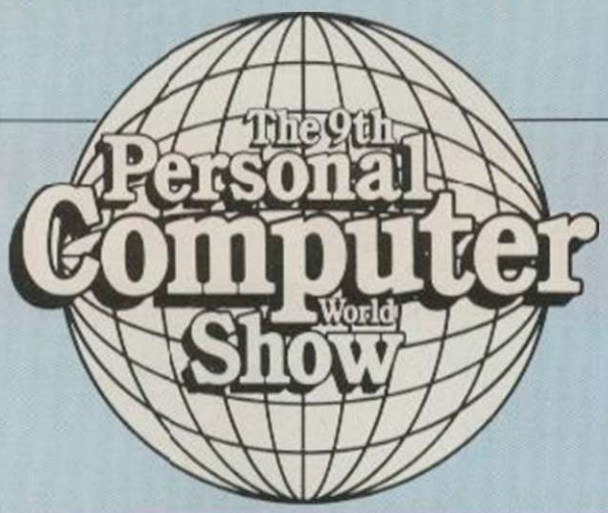
Firebird Software
Wellington House
6-9 Upper St Martins Lane
London
WC2 9DL
01-379 6755

First Publishing Ltd
Unit 20B Horseshoe Park
Horseshoe Road
Pangbourne
Berkshire
RG8 7SW
5244 07357

Glentop Publishers
Standfast House
Bath Road
High Street
Barnet
Herts
01-441 4130

Gremlin Graphics Ltd
Alpha House
10 Carver Street
Sheffield
S1 4FS
0742 753423

Haba Systems Ltd
Pier Road
North Feltham Ind. Estate
Feltham
TW14 0TT
01-751 6451



ADDRESS BOOK CONT'D

Interceptor Group
Murcury House
Calleva Industrial Park
Aldermaston
Berkshire
07356 71145

Kempston
Unit 4
Manton Lane
Beds
MK41 7HY
0234 327544

Level 9 Computing
229 Hugheraden Road
High Wycombe
Bucks
HP13 5PE
0494 26871

Lightning Distribution Ltd
841 Harrow Road
London
NW10 5NH
01-969 5255

Lightwave Leisure Ltd
Unit 31
Wirral Business Centre
Gorsey Lane
Birkenhead
L41 1JW

Linear Graphics Ltd
28 Purdeys Way
Rochford
Essex
SS4 1NE
0702 541664

Llamasoft
49 Mount Pleasant
Tadley
Hampshire
RG26 6BN
07356 4478

Mastertronic
8-10 Paul Street
London
EC2
01-693 8354

Melbourne House
Castle Yard House
Castle Yard
Richmond
TW10 6TF
01-940 6064

Micronet 800
Durrant House
8 Herbal Hill
London
EC1
01-278 3143

Mikro-Gen
Unit 15
The Western Centre
Western Road
Bracknell
Berkshire
0344 427317

Mirrorsoft
Maxell House
Worship Street
London
EC2A 2EN
01-377 4785

Modem House
70 Longbrook Street
Exeter
Devon
EX4 6AP
0392 213355

Neutral Ltd
Cecil House
2 Tabernacle Avenue
Plaistow
London
E13 8ED
01-474 6010

Newstar Software
200 North Service Road
Brentwood
Essex
CM14 4ST
0277 229509

Ocean Software Ltd
Ocean House
6 Central Street
Manchester
M2 5NS
061 832 6633

Olympic Systems Ltd
42 Boston Road
Beaumont Leys
Leicester
LE4 1AA
0533 358839

Opus
55 Ormside Way
Holmethorpe Ind. Est.
Redhill
Surrey
0737 65080

Orpheus Ltd
Unit 1 Church Farm
Hatley St. George
Sandy
Beds
0767 51481

Palace Software
275 Pentonville Road
London
N1
01-278 0751

Pitman Publishing Ltd
128 Long Acre
London
WC2 9AN
01-379 7383

Precision Software Ltd
6 Park Terrace
Worcester Park
Surrey
KT4 7JZ
01-330 7166

Psion Ltd
Psion House
18-19 Harcourt Street
London
W1H 1DT
01-723 9408

Rainbird Software
Wellington House
Upper St Martins Lane
London
WC2H 9DL
01-240 8838

Research Machines
Mill Street
Oxford
OX2 0BW
0865 249866

Robtek
Unit 4
Isleworth Business Complex
St Johns Road
Isleworth Middlesex
01-847 4457

Romantic Robot
77 Dyne Road
London
NW6 7DR
01-625 9463

Satellite Computing
236 Sandycombe Road
Richmond
Surrey
TW9 2EQ
01-940 1810

Softek International
12-13 Henrietta Street
Covent Garden
London
Wc2E 8LH
01-240 1422

Software Int. Distribution
Unit 10/11
Imperial Studios
Imperial Road
London SW6
01-731 4555

Spectravideo
165 Garth Road
Morden
Surrey
SM4 4LH
01-330 0101

Spectrum Group plc
5 Hunting Gate
Hitchin
Herts
SG4 0TJ
0462 37171

Tasman Software Ltd
Springfield House
Hyde Terrace
Leeds
LS2 9LN
0532 438301

Times Computer Services Ltd
95 York Street
London
W1
01-258 1878

Transform Ltd
24 West Oak
Beckenham
Kent
01-658 6350

Tynesoft
Addison Ind. Est.
Blaydon
Tyne & Wear
NE21 4TE
091-414 4611

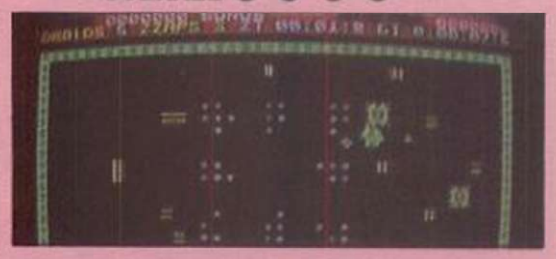
Videk Ltd
26 Queensbury Station Pde
Edgware
Middlesex
HA8 2QA
01-951 1183

W H S Distribution
St Johns House
East Street
Leicester
LE1 6NE
0533 551196

DROID ONE

► *C16/Plus 4 ● Bug Byte ● Arcade ● Ian Nicol ● £?.??*

OVERALL ● ● ● ●



Droid One is a robot sent to rescue humans who have become stranded on the planet Vragus IV while mining for the elusive Di-planium ore.

Thirty-two zones of increasing difficulty lay between you and the completion of the rescue mission. Thirteen varieties of alien, from homers and speedies to pods and deadly shrapnel, teleport on to the screen in ever-increasing numbers.

As it stands the mission is difficult but if you feel like more of a challenge there is a suicide mode in which you have to last one minute in each zone to gain a bonus score – not so easy as it sounds.

STORM

► *Amstrad ● Mastertronic ● Arcade Adventure ● Francis Jago ● £1.99*

OVERALL ● ● ● ●

Without doubt, *Storm* is a budget version of the best arcade machine of the last few months, *Gauntlet*. It is a one- or two-player game in which the idea is to travel round a maze until you can find and rescue Corrine, Storm's wife.

Excellent graphically, Storm is an ideal two-player game. Using teamwork, Storm and his aide Agravain Undead can blast theiur way past almost any obstacle. As with Gauntlet, there are food, armour, scrolls and masks to collect; some are good and some are not. As budget Amstrad games go, this is a classic.

REBELSTAR

► *Spectrum 48K● Firebird ● Strategy ● Ian Nicol ● £1.99*

OVERALL ● ● ● ● ●

In *Rebelstar*, the game takes place at a control base on the moon. In the one-player game you take control of a group of desperate raiders as they attack Moonbase Delta. Once inside, you must locate and then destroy the ISSAC computer which controls the base.

The two-player game is similar but the second player takes command of the operatives of the base. In addition to defending against the raiders, he must also activate additional droids and arm his human operatives with rifles from the armoury. As the game progresses, reinforcements arrive for both sides and the battle continues.

ROBO KNIGHT

► *C16 ● Americana ● Arcade Adventure ● Francis Jago ● £2.99*

OVERALL ● ● ● ●

With more and more companies releasing high-quality software for the C16, releases such as *Robo Knight* can be looked at in a completely different way. Compared to Commodore 64 games, it is nothing very special; in its own right, however, it is a tremendous fun arcade/adventure.

Graphically it is a cross between a Jeff Minter game, with excellent use of colour, and *Jet Set Willy*. It has all the usua obstacles – sliding doors, bridges and jumps, and is very well-presented.

Overall, Robo Knight is very good value and will provide hours of fun for users of any age.

FREAK FACTORY

► *C64 ● Firebird ● Arcade Adventure ● Francis Jago ● £1.99*

OVERALL ● ●

Riding high on the mammoth success of *Thrust*, Firebird has released its latest batch of budget games for the Commodore 64. The first is *Freak Factory*. As with many of the recently-released arcade/adventures for the Commodore 64, the main Freak Factory character is a somersaulting man whose sole desire in life is to rid the world of an evil professor.

Using a sideways "flick" screen, rather than scrolling, there is a wide variety of baddies to dodge and holes to leap over. As a budget game Freak Factory is not bad, but neither is it good enough to deserve recommendation.

DOPPLEGANGER

► *Amstrad ● Americana ● Arcade Adventure ● Francis Jago ● £2.99*

OVERALL ● ● ●

Alligata Software has a good name for producing software but many of its titles fail to have lasting impact. What has that to do with *Doppleganger*? Well, Americana bought Doppleganger and has released it at a budget price in an attempt to sell more copies.

As arcade adventures go, Doppleganger is reasonably good. It has very pretty graphics for an inexpensive game and would provide many hours of fun for the dedicated Ultimate fan. A Doppleganger is, supposedly, a double. Everyone has a Doppleganger somewhere. In this game, you control both you and your double. Novel and fun.

THE 64 SOFTWARE CENTRE

1 Princeton Street, London WC1

01-430 0954

Software for CBM64/128

d=disk r=cartridge t=tape

ACCOUNTS			
Anagram	Sales Ledger	d	75.00
	Purchase/Nominal Ledger with journal . .	d	75.00
	Cashbook	d	75.00
B.I.	Checkbook	d	24.00
Studio	Payroll 64	d	44.00
	Payroll 128	d	44.00
Dell	Invoice Generator	d	20.00
Fieldmaster	Home Accounts	d	10.00
Timeworks	Personal Financial Planner (64 or 128) .	d	60.00
	Money Manager	d	24.00
	Electronic Checkbook	d	24.00
STOCK CONTROL SYSTEMS			
Anagram	Stock Control	d	75.00
Practicorp	Inventory	d	12.00
DATABASE FILING SYSTEMS			
Cardco	File Now	d	30.00
	Mail Now	d	30.00
Fieldmaster	Record Card	d	10.00
	Mail label	d	10.00
Precision	Superbase (64)	d	49.00
	Superbase (128)	d	69.00
	Superbase Starter	d	30.00
Supersoft	Instard Recall	d	15.00
	Instart Recall	t	12.00
Timeworks	Data Manager 2 (128)	d	60.00
WORD PROCESSORS			
Cardco	Write Now	r	59.00
	Spell Now	d	29.00
Hesware	Heswriter	r	29.00
Precision	Superscript (64)	d	49.00
	Superscript (128)	d	64.00
Supersoft	Word Perfect	d	15.00
	Word Perfect	t	15.00
Tasman	Tasword 64	d	19.00
	Tasword 64	t	17.00
Timeworks	Word Writer (64 or 128)	d	60.00
Xetec	Fontmaster II	d	69.00
SPREADSHEETS			
Cardco	Calc Now	d	35.00
Fieldmaster	Worksheet	d	10.00
Handic	Easy Calcresult	r	35.00
	Advanced Calcresult	r+d	59.00
Practicorp	Practicalc II	d	39.00
	PS Spreadsheet	d	15.00
Supersoft	Busicalc 3	d	49.00
Timeworks	SwiftCalc 128	d	60.00
AIDS & UTILITIES			
Access	Mach 5 Fastload	r	25.00
Adamsoft	Chartpak	d	20.00
	Graphic Designer	d	14.00
Baudville	Blazing Paddles Graphic Designer	d	59.00
B.I.	BGraph (incl Statistics)	d	30.00
Broderbund	The Printshop	d	39.00
	Graphics Library (1, 2 or 3)	d	25.00
	The Printshop Companion	d	35.00
Cardco	S'More (22K extra Ram, Toolkit)	r	59.00
	Graph Now/Paint Now	d	40.00
	Freezeframe (Transparent Screer Dump)	r	49.00
CSM	1541 Disk Drive Alignment Program	d	49.00
Crystal	Zeus Assembler	d	14.00
	Zeus Assembler	t	10.00
Epyx	Fastload (incl Editor, Monitor)	r	29.00
F.P.	Pascal 64	d	30.00
Hesware	Forth	r	49.00
Koala	Koalapad (incl Printer Disk)	d	89.00
Oasis	Laser Basic	d	19.00
	Laser Basic	t	15.00
	Laser Compiler	d	25.00
	Laser Compiler	t	19.00
	Laser Genius	d	25.00
	Laser Genius	t	19.00
OCS	Oxford Pascal	d	42.00
	Petspeed 128	d	42.00
Practicorp	64 Doctor	d	12.00
Precision	Supertype	d	20.00
	Supertype	t	15.00
E.A.	Moviemaker	d	35.00
Springboard	The Newsroom	d	59.00
	Clip Art 1	d	25.00
	Clip Art 2	d	30.00
Skyles	Blitz Compiler	d	50.00
	Victree	r	50.00
Supersoft	Mikro Assembler	r	55.00
Tronix	Sam Voice synth	d	35.00

ALL PRICES INCLUDE VAT

ALL IN STOCK NOW – Callers welcome (10am-6pm including Saturdays)

Mail Order: Cheque or PO – add £1 Credit cards (Access/Visa): phone or write. Immediate despatch.

The 64 Software Centre, 1 Princeton Street, London WC1

Please supply the following items:

1 ..... Qty ..... @ £ .....
2 ..... Qty ..... @ £ .....
3 ..... Qty ..... @ £ .....
4 ..... Qty ..... @ £ .....

TOTAL £ .....
POSTAGE £ .....
TOTAL £ .....

Name .....
Visa/Access Card No .....
Address .....
.....
.....
Date ..... Signature .....

Take part in the Domark

Golden Trivia Challenge

Win a Trivial Pursuit board game with **solid gold** *playing pieces worth an estimated*

£10,000

The Golden Trivia game features trays and segments diecraft from solid gold. The complete game will be the only solid gold game ever made.
To take part in the overall competition, *Your Computer* readers must first win through the first round by answering the questions presented here. The winner and four runners-up of the heat, in addition to taking part in the final, will win a copy of the new Games II Edition of *Trivial Pursuit*, the board game.
Another 10 runners-up will receive a pack of Trivial Pursuit After Dinner Chocolate Mints.

HOW TO ENTER

Study the questions and answer as many as possible. For each correct answer entrants will be awarded 10 points. The person with the most points will be adjudged the winner of the *Your Computer* heat of the competition. The runners-up prizes will be awarded to the entries with the second, third and so on highest points. At any stage, in the event of a tiebreak, the humour and originality of the tiebreak question will determine the winning entry.

Closing date September 30, 1986.

Computing

In his youth, Sir Clive Sinclair was a technical journalist on a monthly magazine. What was the title of the magazine?

Which early microcomputer model number could have formed part of a post code for an Open University town?

Your Computer *featured in a TV advertisement for which well-known tinned food product?*

Which company experienced jumbo-sized problems with the Advertising Standard Authority with its Christmas 1984 TV advertising campaign?

Science Fiction

What type of TV mission did Mr. Spock accept after he finished duty aboard the Enterprise?

Which famous sci-fi film earned the irreverant alternative title Ten past Eight?

For what do the initials of Dr Who's time travel machine the Tardis stand?

Which famous fictional computer was one step ahead of Big Blue?

General Knowledge

At what temperature do the Celsius and Fahrenheit scales coincide?

Who was the last English tennis player to win a Wimbledon title?

Who stayed in orbit when the Eagle landed?

What was the title of the first book to be published in England?

Films

Which saintly actor was persuaded to join the Civil Service?

Which dirty cop shares a surname with a former Prime Minister?

Which motorcycling star attempted to jump to freedom in The Great Escape?

What was the name of the town in which Gary Cooper did his duty at high noon?

In addition, we would like you to invent your own Trivial Pursuit question which may, at a future date, be used in a data tape for Trivial Pursuit, the computer game.

My trivial question is

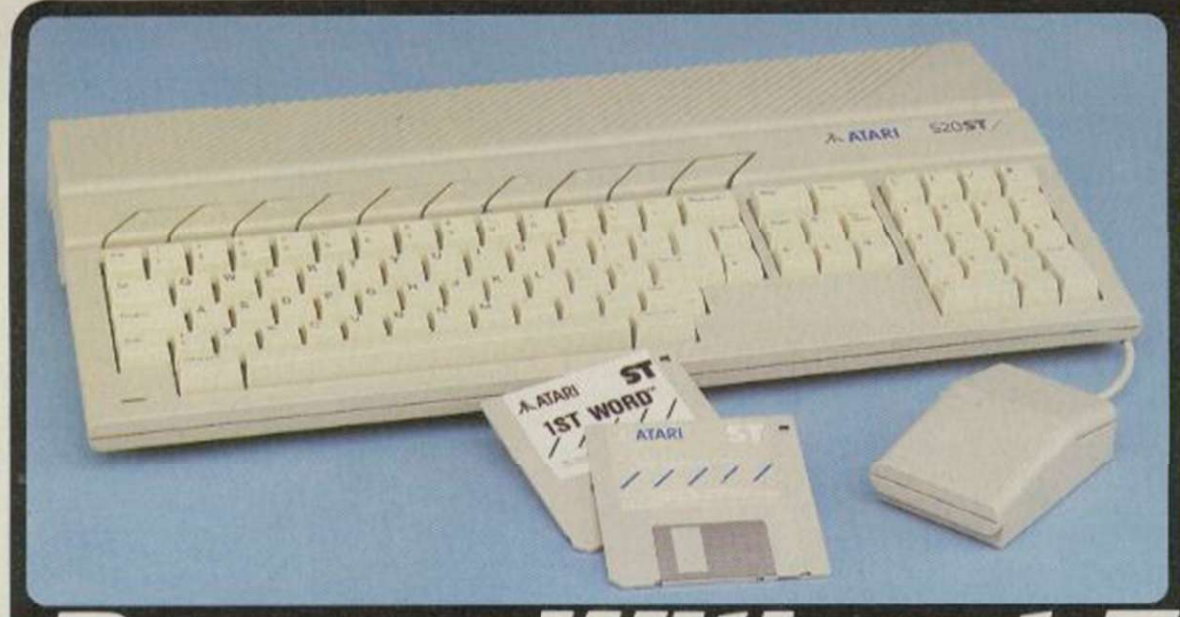
Answer

Name

Address

Postcode

Daytime telephone number



ATARI ST

Power Without The Price!

FREE SOFTWARE

When you buy one of the new Atari ST computers from Silica Shop, you will receive a large and varied software package free of charge. This package covers several applications and comprises a total of nine titles. All ST's now have TOS/GEM on ROM, and the total list of free software is as follows:

1) GEM - *DR Desktop environment with WIMP (in ROM)*
2) TOS - *Tramiel Operating System (in ROM)*
3) 1st WORD - *Word Processor by GST using the GEM environment and multiple windows*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) DOODLE - *Simple paint/doodle drawing package (works on mono or colour systems)*
7) MEGAROIDS - *Asteroids type game by Megamax*
8) NEOCHROME - *A powerful colour paint and graphics package (only useable with colour systems)*
9) CP/M EMULATOR - *Allows the use of DR's Z80 C/PM software to run on any ST system*

3rd PARTY SUPPORT

The power and potential of the ST range of computers is causing a flood of new software titles, peripherals and accessories from third party manufacturers. Titles range from word processing to spreadsheet programs, from graphics and games to database management - all with those easy drop-down menus and windows. With the list of companies producing ST software including dozens of top names, you can expect some first class titles for the new ST range. The following includes a selection of the third party manufacturers who have developed, or are working on, products for the ST range.

ABACUS	EXTENDED S/W	MICRO-ED INC	ROBINSON SYS
ACADEMY	FIDELITY	MICROPRO	SCARBOROUGH
ACCOLADE	FIRST BYTE	MICROPROSE	SIERRA ON LINE
ACTIONSOFT	FIRST PUBNG	MICROPRO ENG	SM SOFTWARE
ACTIVISION	FLIP 'N' FILE	MICRAPH INC	SOFTEK
ADVENTURE INT	GLENTOP PBNG	MILES COMP	SOFTLABS
ANTIC	GST SYSTEMS	MIRACLE	SOFTLOGIK
AMERICAN COVERS	HABA	MIRAGE	SOFTWARE COMS
ARTWORX	HAYDEN	MIRRORSOFT	SECS
ASHTON TATE	HIPPO	MONARCH DEV	SOFTWARE PUNCH
ATI	HISOFT	MOSAIC	SOFTWORKS
AUDIO LIGHT	INFOCOM	MU,TIFORM	SORCIM/RUS
AZTEC	INSIGHT	MU,TIMATE	SPINNAKER
BATTERIES INC	INSOFT	OCEAN	SST SYSTEMS
BAYVIEW	ISLAND LOGIC	ODIN	STONEWARE
BECKEMEYER	KNOWLEDGWARE	OMNITREND	SUBLOGIC
BETTER WORKING	KUMA	OSS	SUNDATA SERVICES
BLUE CHIP	LASERSOFT	OTHER VALLEY	SUNSHINE BOOKS
BOS	LEHRNER	OXZI	SUPPLEMENTAL
CASHLINK	LEVEL 9	PAPERLOGIC	SYSTEMATICS
CHANG LABS	LIONHEART	PARADOX	TALENT
CHELTEK SYST	LLAMASOFT	PENGUIN	TDI
CHIPSOFT	LONGMINSTER	PHLON	TELARIUM
COMPUTE!	MAINTHINK CORP	PLANNER	TK COMPUTER PRO
CROSSBOW MUSIC	MAP COMPUTERS	PLANTIR	TOP EXPRESS
DATABENCH	MARK of UNICORN	PROGRESSIVE	TOWNGATE
DATACODE SYS	MARK WILLIAMS	PROSPERO	TYNESOFT
DATA SYSTEMS	MARTIN CONSU	PR'ORITY	UNISON
DELTRON	McGRAW HILL	PSION	VIP
DILITHIUM PRESS	MEGAMAX	PS*GNOSIS	WASON MICROCHIP
DRAGON GROUP	MEMOREX	QUICKVIEW SYS	WHITENDALE
DUFOSE PUBNG	METACOMCO	RAINBIRD	WINDHAM CLASSICS
ELECTRONIC ARTS	MICHTRON	RE3ENT	WORD of GOD COM
EXECON	MICRODEAL	RISING STAR	XLENT

520ST-M

NEW 512K 520ST-M KEYBOARD: The new 520ST-M keyboard costs only £346.96 (+VAT=£399) and is yet another price breakthrough for Atari Corporation. The keyboard now includes both an RF modulator and cable, allowing you to connect it to an ordinary domestic television set. In addition, the keyboard is supplied with 512K RAM, a mouse and a free set of 3½" disks containing applications software. The TOS operating system and the GEM graphics package are now supplied on 192K ROM chips which are already installed in the keyboard. This means that the operating system will automatically boot in when you switch the power on. In addition to the keyboard, you will also need to purchase either a ½Mbyte disk drive (RRP £130+VAT) or a 1Mbyte disk drive (RRP £174+VAT). Either disk drive will provide you with fast information retrieval and a vast amount of storage space. If you prefer not to use your own TV set, you may connect your ST to a monitor. You may purchase the Atari SM124 monochrome monitor (RRP £130+VAT), or one of Atari's two Thomson colour monitors. Alternatively, you may choose one of the many third party colour monitors which are available.

NEW 1024K 520ST-M+ KEYBOARD: In addition to the standard 520ST-M, we have a new keyboard which we are calling the Atari 520ST-M+. The M+ is a 520ST-M keyboard which has been enhanced by a third party RAM upgrade to 1 megabyte of memory. The 520ST-M+ is available from Silica at a retail price of only £433.91 (+VAT=£499). This product will provide you with an alternative to the 1040ST-F, but at a lower price. Additionally, it features the advantage of the 520ST-M's built in modulator.

£347

1040ST-F

For the businessman and the more serious home user, Atari have introduced the 1040ST-F, a low cost powerhouse which can be introduced to a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The new one megabyte 1040ST-F enhances Atari's 'value for money' reputation in the marketplace as it is the first personal computer available with one megabyte of memory for less than £800. You can purchase the 1040ST-F as a monochrome or colour system. The price of the monochrome system is £799 (+VAT = £918.85), with the colour system at only £999 (+VAT = £1148.85). The new 1040ST-F not only features twice as much memory as the 520ST-M, but also includes a one megabyte double sided disk drive and mains transformer, both built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied with a free software package. Unlike the 520ST-M, the 1040ST-F was manufactured solely with business use in mind and as such is supplied with a monitor. It does not include the RF modulator or lead. We now have stock of the 1040ST-F at all four branches of Silica Shop. Call into your nearest branch for a demonstration.

1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
117 Orpington High Street, Orpington, Kent, BR6 0LG
Lion House (1st floor), 227 Tottenham Court Rd, London, W1
Selfridges (1st floor), Oxford Street, London, W1A 1AB

£799

THE ATARI EXPLOSION!

If you read the specialist computer press, you will have noticed that there is one company which is getting a large slice of editorial space at the moment, that company is Atari Corporation. Atari have been making the news since the launch of their new 16/32 bit range of ST computers. Led by the powerful figure of Jack Tramiel and under the banner 'Power Without The Price', Atari are manufacturing new computers at unheard of prices, with the power to challenge firmly established market leaders. With the introduction of IBM compatibility, a CP/M emulator, a powerful networking system and a communications package for their new low cost powerhouses, it doesn't look as if it will be long before there is an explosion of the magnitude which will see Atari placed firmly besides such names as IBM and Olivetti in the personal computer marketplace. Read on for more details of what Atari are doing, and how they are putting their 'Power Without The Price' computers beyond the reach of the competition.

FREE CP/M EMULATOR

This newly annouced CP/M Emulation Package, will enable software written under Digital Research's Z80 CP/M operating system to be run on the ST family of computers. There are several thousand applications written for CP/M in the UK alone, and several of the major CP/M software development houses may convert their programs to 3½" disk format for the ST range. The CP/M emulation package is supplied FREE OF CHARGE by Silica Shop with all ST computers.

IBM COMPATIBILITY

To make the ST available to those businesses who currently run IBM systems and are looking for a low cost expansion method, Atari have announced a co-processing unit for ST computers. This processor will open the ST range to all IBM or IBM compatible software applications. The unit, which attaches to the ST computers via the DMA (Direct Memory Access) port, contains an Intel 8088 processor with 512K of RAM and will accept a 5¼" disk drive. In it's ST mode, the unit will also act as a second disk drive, offering the user an additional 500K of memory. The IBM co-processing unit should be available in late Summer 1986. If you would like to be informed when it is released, please complete and return the coupon below. We will send you further details as soon as we have them.

20Mbyte HARD DISK £739

The new Atari hard disk for the ST range has just been released. All ST computers already have a hard disk interface built into them so there is no external interface required. The memory size of the disk is a massive 20 megabytes (unformatted) with a data transfer rate of 1.33 Mbytes per second. At a price of £739 (+VAT=£849), the 5¼" hard disk offers massive storage with fast access at a very reasonable price.

NEW ST SOFTWARE PACKAGES

There are now hundreds of software packages which have been announced for the Atari ST range. Titles available now include DB Man, a DBase 3 clone as well as H & D Base, a DBase 2 clone. In addition, PC Intercomm is a VT100 emulator which enables you to use any ST keyboard as a terminal connected to a mainframe or mini. Other programs include a Lotus 1-2-3 clone (see paragraph below).

VIP PROFESSIONAL - LOTUS 1-2-3™ CLONE

This is probably the most impressive program to have been released so far for the ST range. VIP Professional is an extremely easy to use, integrated spreadsheet, database and graphics program which is identical both in features and commands to Lotus 1-2-3™. The same spreadsheet analysis, information management and extraordinary business graphics are all combined in one easy to learn, affordable package. What's more, VIP Professional not only has all the features of 1-2-3™, you can also type the same commands to do the same things. Probably the most surprising feature of VIP Professional is not its total compatibility with Lotus 1-2-3™, nor its ease of use, but its price. Lotus 1-2-3™ for the IBM PC/AT costs £395 (+VAT=£454.25), whereas VIP Professional for the ST is a mere £169 (+VAT=£194.35). That's less than half the price! If you would like further details of VIP Professional, please return the coupon below.

SILICA SHOP

WE ARE THE UK's No1 ATARI SPECIALISTS

At Silica we have been successfully dedicated to Atari ever since their products first appeared on the UK market. We can attribute our success largely to the Atari specialisation which we practice and to the user back-up we provide. Rest assured that when you buy a piece of Atari hardware at Silica you will be fully supported. Our mailings giving news of software releases and developments will keep you up to date with the Atari market and our technical support team and sales staff are at the end of the telephone line to deal with your problems and supply your every need. With our specialist bias, we aim to keep stocks of all the available Atari hardware, software, peripherals and accessories. We also stock a wide range of Atari dedicated books and through us, the owners on our list can subscribe to several American Atari dedicated magazines. We can provide a full service to all Atari owners and are now firmly established as the UK's NUMBER ONE Atari specialists. Here are just some of the things we can offer to our customers.

- ★FREE POST & PACKING ON MAIL ORDERS
- ★FREE NEXT DAY DELIVERY
- ★INFORMATION MAILING SERVICE
- ★TECHNICAL SUPPORT TEAM
- ★HIGHLY COMPETITIVE PRICES
- ★AFTER SALES SUPPORT SERVICE
- ★REPAIR SERVICE ON ATARI PRODUCTS

If you would like to be registered on our mailing list as an Atari computer owner, or as a person interested in buying an Atari machine, let us know. We will be pleased to keep you up to date with new Atari developments free of charge. So, return the coupon today and begin experiencing a specialist Atari service that is second to none.

SILICA HOTLINE 01-309 1111

SILICA SHOP LTD, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

SEND FOR FREE ATARI ST LITERATURE

To: Silica Shop Ltd, Dept YC 0986, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME FREE LITERATURE
ON THE NEW RANGE OF ATARI ST COMPUTERS

Mr/Mrs/Ms: ..... Initials: ..... Surname: .....

Address: .....

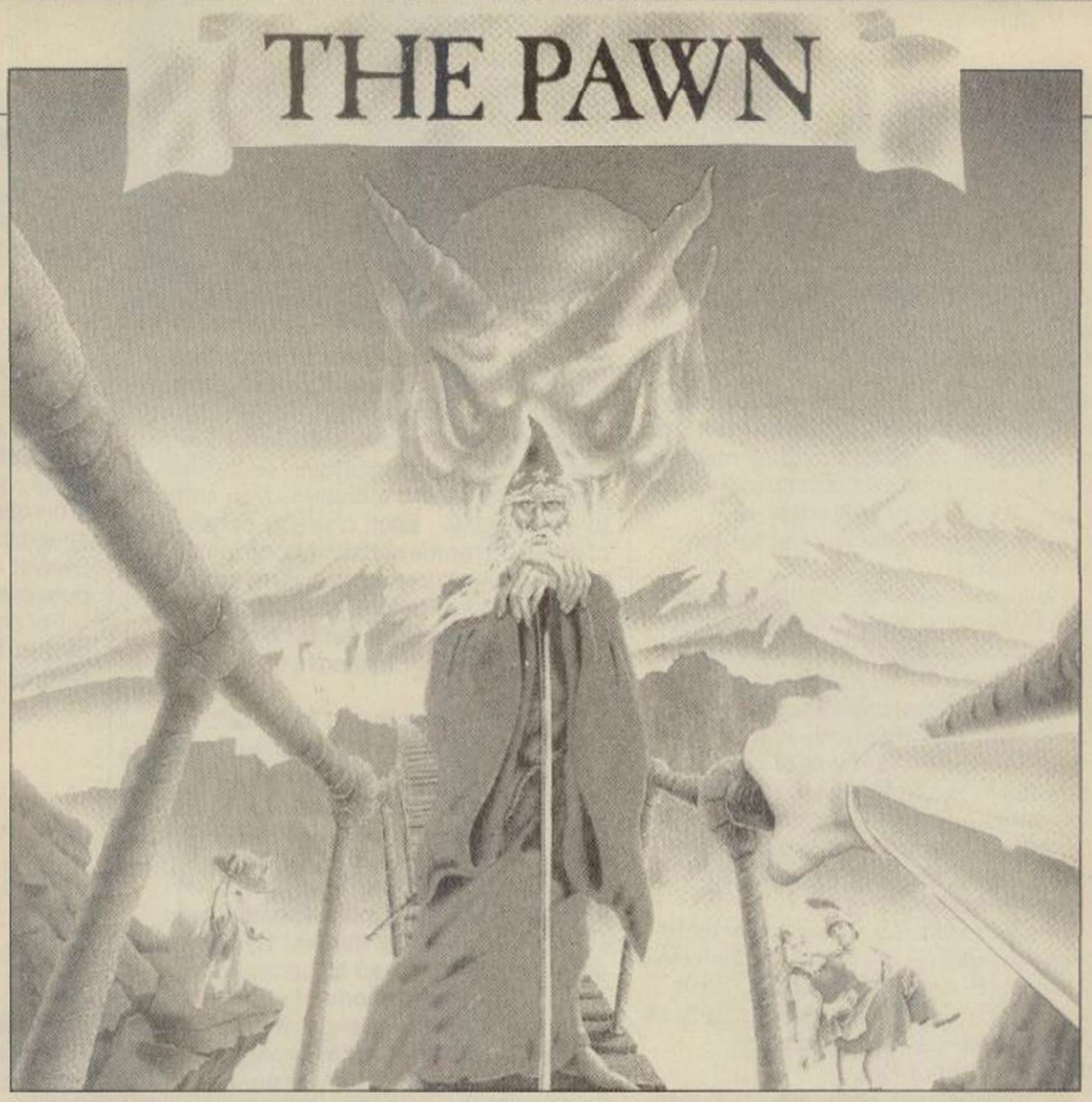
.....

.....

.....

..... Postcode: .....

Do you already own a computer
If so, which one do you own? .....



The Pawn is coming to the 64. Isaac Asimov games to be released soon. News in Roger Garrett's monthly offering.

Adventure corner

The Pawn is coming. That is the news for which most adventurers have been waiting. Magnetic Scrolls, along with Rainbird, is finally set to release the most widely-publicised and eagerly-awaited adventure game since *Lord of the Rings*. Those who own an Atari ST or Sinclair QL will no doubt already have enjoyed the delightful land of Kerovnia. Now CBM64, Amstrad and Amiga owners can look forward to exploring this land as well.

I expected the CBM64 version to be text-only, as is the QL game, but at a recent demonstration I was surprised to see that the amazing ST graphics have been reproduced faithfully for the machine. There are no pull-down windows as in the ST version but the graphics are some of the best I have seen on the 64. A full CBM64 review, complete with hints, will appear in this column as soon as I receive a copy.

Also ready to appear soon is the re-vamped Level 9 trilogy. Released by Rainbird and re-titled *Jewels Of Darkness*, it is a must for every adventurer, even if you have played them under the old titles of *Colossal Adventure*, *Adventure Quest* and *Dungeon Adventure*. With more than 600 graphic scenes, excellent atmospheric text descriptions and the new parser system it shows Level 9 at its very best. Also from Level 9 is *Knight Orc* in which you play the part of an Orc hell-bent on reeking revenge on all those vicious adventurers who have decimated your band since adventures first began.

Role-playing bandwagon

Adventure Soft U.K. will soon be releasing the first of the Isaac Asimov sci-fi games. The first is called *Kayleth* followed by *Sword of the Samurai*. Also planned is a series on *Masters of the Universe*. It all sounds very promising.

After a slow start it appears that more and more software companies are beginning to jump on the role-playing game bandwagon. After the success of *Ultima III* it now seems that everybody is producing RPGs. *Ultima IV* will certainly be a massive hit as soon as U.S. Gold can release it. Others in the U.S. Gold pipeline are *Phantasy*, *Questron* and *Gemstone Warrior*. I have seen none of these yet but reliable sources have told me they are very good.

Ariolasoft is due to release *The Bard's Tale* in which you and your loyal band explore the town, cellars and sewers of Skara Brae which is held in the grip of an eternal winter spell cast by an evil old wizard charmingly called Mangar the Dark. With more than 85 spells to use, 16 levels, animated monsters and 3D scrolling mazes, there seems plenty to do in this game.

Overall it looks like being a hectic Orc-bashing adventurer, treasure-finding, spell-casting period for all.

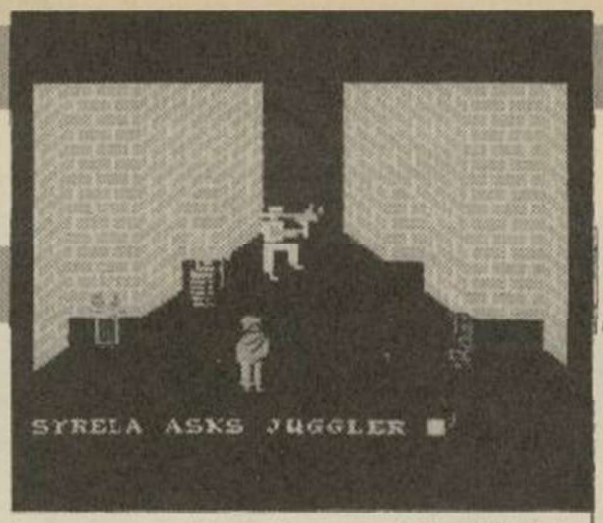
With more and more adventurers playing Infocom games, plus the good news that Activision is to market Infocom in this country, I thought it would be a good idea to start a specialist corner devoted solely to these adventures. Apart from hints, I would like you to send me all those amusing little items which crop up. For instance, try *Rezroving the Turtle* in *Enchanter* for a really funny response.

Adventure helpline

Are you stuck in an adventure? Do you need to let off steam or are you just an adventurer who likes to help other people? If so, this is your corner. Write and let me know what you think of a particular game, what was the worst game you played, what was the best, complaints about software houses, praise for software houses – anything you feel would be of interest to readers.

For instant help, telephone the new Adventureline Hotline between the hours of 7-9pm on weekdays only. Ask for Jackie on 061 339 0092 or send letters, hints, maps to Roger Garrett, Adventureline, c/o Your Computer, 79-80 Petty France, London SW1H 9ED.

MANDRAGORE



► *CBM64 Cass/Disc.*
Amstrad 6128 Cass/Disc
● *Infrogrames* ● *Role-playing adventure*
● *Ian Nicol* ● *£14.95*

Let us go back through the mists of time to a land inhabited by stalwart warriors, fair maidens, magicians and all manner of weird and wonderful creatures – a land where bold actions reap their own rewards, a land definitely not for the faint-hearted.

It was in such a kingdom that the wise and benevolent King Jorian ruled. Under his rule the domain existed peacefully but, as we all know, nothing lasts for ever. So it was that one fateful day while Jorian was walking calmly in the countryside that a shower of shooting stars fell from an otherwise clear sky. One struck Jorian, killing him instantly. Immediately the land was taken over by an evil Lord called Yarod-Nor and that is when the troubles began.

To say Yarod-Nor was a tyrannical despot would be an understatement. He was really Bad with a capital B and so it was not long before an intrepid band of fearless warriors decided to do something about him.

As in any typical RPG, your first task is to form your band. It consists of four characters. You decide the occupation of each person – thief, warrior – and what race. There are five races, ranging from

GRAPHICS ●●●
SOUND ●●●
PLAYABILITY ●●●●●
VALUE FOR MONEY ●●●●●
OVERALL ●●●●

dwarf to human; what sex and, finally, the characteristics of each member, constitution, strength, wisdom and so on. Once having done that you name your members and off you go to solve the mysteries.

One way in which the game differs from a normal RPG is that there is no innkeeper to sell you items needed on the quest. What you must do is find objects either in the various villages or chateaux and then sell them to a purchaser, who is usually found in a village. In that way you will be able to raise sufficient money to enable you to buy what you need.

Once having accomplished that it is time to tackle the adventure more thoroughly. Venturing out of the village finds you in map mode; to reach other parts of the land you type N.S.E.W. The screen scrolls in whichever direction you choose, depicting mountains, rivers and forests. On finding a chateau you enter by pressing 'C'. Each chateau consists of about 30 rooms and dungeons; most have monsters, treasures and mysteries to get/kill/solve before you can hope to reach Yarod-Nor and defeat him and with more than 10 chateaux that is plenty of exploring.

The screen is split into four sections. The left-hand block depicts the area in which you are; top right shows the characters, numbered 1,2,3 and 4; bottom right lists objects and monsters, which are shown as A.B.C.D; the remaining bottom three lines are for text input. Most of the syntax/vocabulary is abbreviated, so only the first two letters of the verb/noun need to be typed-in.

Controlling the actions of each character is a little strange at first but becomes relatively easy after playing for a time. The numbers 1 to 4, assigned to each character, are shown on the right-hand side of the screen, along with experience and life expectancy. So if No. 1 is called Myrtle, pressing key no. 1 will throw that name on the bottom three lines of the screen. Then if, say, you want to attack a monster at B, an Orc in this case, you input AT; the program responds with "Myrtle attacks Orc with sword" but you would need to be carrying a sword before an attack could be successful.

There is also a very useful option in which you can split your party, thus enabling you to search four rooms at once. All you need to do to accomplish this is to type 1 (Myrtle) EX (Explore) N (North) and likewise for the rest of your band but remember, a team member alone is more likely to be killed if attacked by a war party.

The graphics tend to be a little crude but that in no way spoils the overall playability of the game which, at first, takes some getting used to. If you persevere, you will soon find that the adventure has much to offer.

The game is in an attractive box complete with easy-to-understand instructions and represents excellent value. It will be appreciated by the ardent RPG fan and should attract many new followers to RPG.

THE BOGGIT

► *CBM64/Amstrad 6128/Spectrum 48K*
● *CRL Group plc* ● *Adventure*
● *Ian Nicol* ● *£7.95*

With the imminent re-release of *The Hobbit* it seems only natural that Fergus McNeil and Co, those masters of the spoof clone, should release *The Boggit*. Once again McNeil puts his tongue firmly in his cheek and takes the mickey out of an established adventure but, as Kenny Everett would say, "all in the best possible taste".

For anybody who has neither read nor played The Hobbit, briefly the plot centres on Bilbo's attempts to travel

GRAPHICS ●●●
SOUND ●●●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●●

across Middle Earth accompanied by Thorin, who tends to be a pain at times. His task is to find and defeat Smaug the Dragon, then return home safely with Smaug's treasure. What McNeil and co-writer Judith Childs have done is to take the original idea and then weave their inimitable brand of humour into it – and a very funny romp it is.

From the moment Grandalf crashes through your front-room window, Tarzan-like, the adventure starts to bubble. Your first problem is to get out of your front room. Once having accomplished that, it is off to visit the Trolls Clearing and have fun with Bernard and Matthew, the most unlikely trolls I have ever had the misfortune to meet, especially when they start to mutter such gems as "He'd look lovely in my crispy batter" or "Bootiful" and guess who they would like to see in the crispy batter?

Text descriptions are more than adequate and the graphics are instant and well-defined. One thing which I thought stood out in the game was the fact that the programmers seem to have looked for a long time at the establishment and adventurers in general and do not miss a trick in taking a large swipe at it – even TV games shows are included. Does "Come on down" ring any bells? In saying that, it is not meant as criticism, merely an observation; adventures should be fun to play and with the likes of Delta 4 on the

scene, I can see sacred cows of adventuring slowly being tossed aside.

My one fear is that with so many clone-type adventures becoming available, it could lead to a general decline in original games. Let us hope that Delta 4 now moves to something of more original content because, when all is said and done, that is what adventuring is about.

MYSTERY VOYAGE

► *CBM64 + disc drive ● Colleen House ● Text Adventure ● Ian Nicol ● £12.95*

I am partial to adventure scenarios which include shipwrecks, great expanses of sea and remote, mysterious islands. *Mystery Voyage* is just such an adventure. The game starts with you abandoning ship; a rickety raft saves you from the same watery fate as your crewmates, so you drift for miles – or so you think – from land, with only a jolly old shark for company. So far so good; the only way to travel is to paddle with your hands. Is it worth it? No problem – but do not try swimming.

You soon discover that land is nearby. By using all points of the compass you will be able to travel to several islands, each with different objects to find and puzzles to solve and each with a death location on it.

Usually I like to be able to read some background information about an adventure I am about to play – it sets the scene and gives some idea of what you are supposed to be doing. Unfortunately, the supplier of this game saw fit only to send me a copy with no other information. That puts me at a disadvantage when attempting to give fair assessment of the game, so if my idea of what I was supposed to be doing is not correct do not blame me.

What I could gather is that to win you must travel round the islands, collecting treasures and other paraphernalia. Avoid volcanos; do not eat apples; make sure you find the water, because in this game you drink and eat a good deal; keep out of dark holes or it is meal-time – and guess who is the meal – until you collect sufficient treasures which, when given to a sea-demon, should enable you to escape from wherever you are.

Examining objects you find, which is essential in any adventure, rewards you only with the inane statement "It's nothing to write home about".

The text-only descriptions are acceptable, though some descriptions are fairly nauseating. For instance, stumbling across a dead demon "whose intestines are slowly being eaten by large maggots" might make you vomit. The location then includes "A foul poo of evil-smelling vomit" – just the thing

GRAPHICS
None
SOUND
●
PLAYABILITY
● ●
VALUE FOR MONEY
●
OVERALL
●

before lunch. There must be some reason behind that but, try as I could, I could not find it and I am afraid that goes for the rest of the game – more of a mystery trip than a Mystery Island and I was never one for mystery trips.

LAPIS PHILOSOPHORUM

► *CBM64/Atari + Disc Drive ● Ariolasoft ● Adventure ● R. Garrett ● £14.95*

Long ago, in the small country of Alkanien there lived a wise and kindly king, Gieselmer Gutfreid. It appeared that the good king had everything he could wish for but one thing marred his otherwise contented life.

Gieselmer longed for an heir to his throne. His first wife had died suddenly of a mysterious illness and, after re-marrying, his second wife showec no sign of providing for his hopes. The years rolled by and because no heir was born the king had no choice but to ask his stepson to become heir to the throne.

That was about the worst possible thing Gieselmer could have done. It transpired that his stepson was very ambitious and did not want to wait until the king died so, in an attempt to gain the throne quickly, he poisoned the king.

Of the many wise magicians who lived in those days, none could heal the ruler. There was one person who had the ingenuity and courage to try to find The Philosopher's Stone. Nobody knew where the stone was but legend had it that not only could the stone turn base metals to gold but, when in powder form, it was mixed with water and, if drunk, could cure any illness. Your quest is to find the stone and save the king.

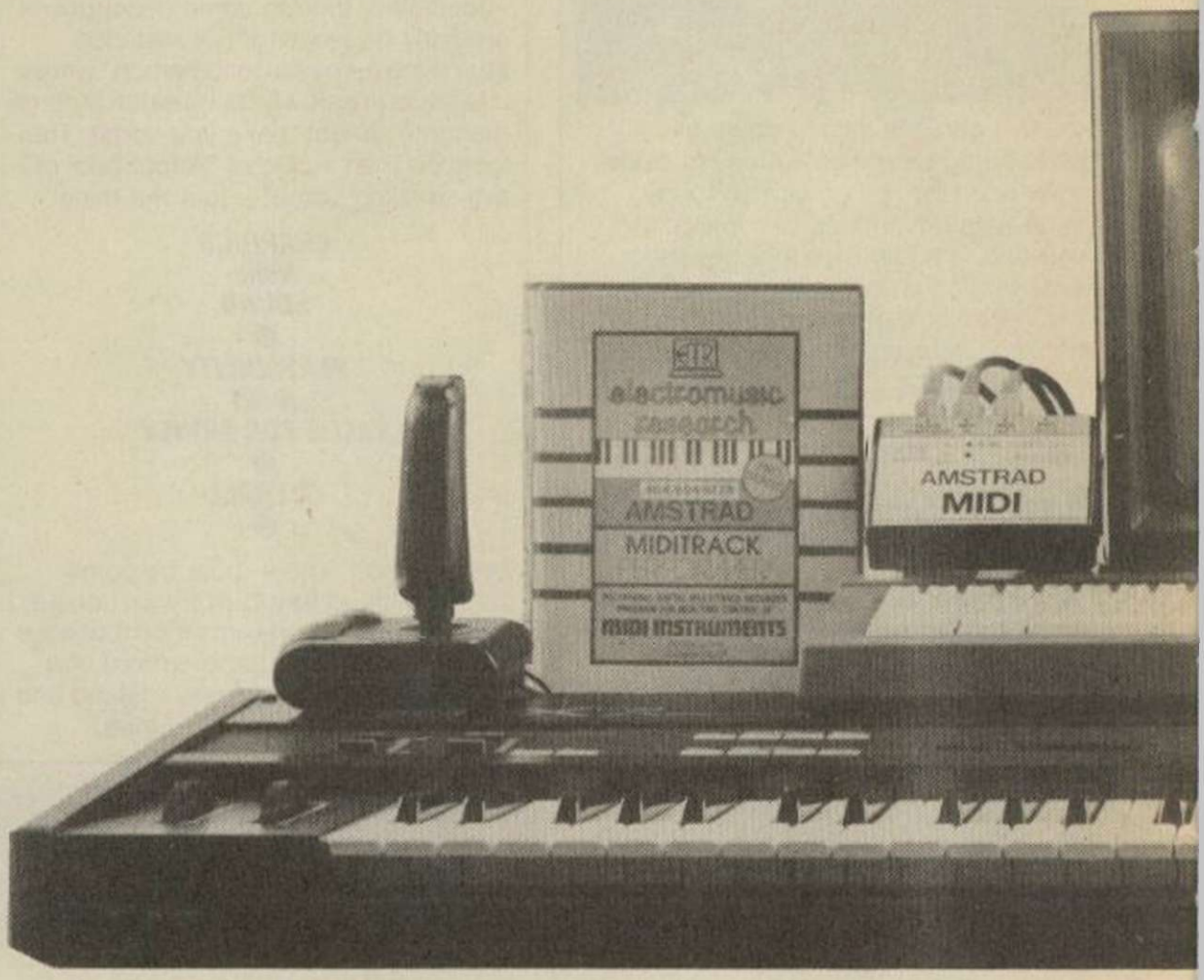
So much for the background to the latest release from Ariolasoft. It is not a very original storyline but the text descriptions and very fast responses in speed of graphics and screen output make the game a cut about the average. There seems to be a fair-sized vocabulary, so that permits you to input the now standard verb/noun/adjective-type sentence.

GRAPHICS
● ● ●
SOUND
● ●
PLAYABILITY
● ● ●
VALUE FOR MONEY
● ● ●
OVERALL
● ● ● ●

Graphics, which are classed as superb on the back cover, are of the block/line type which tend to give the game a dated look. I would not go so far as to they are more than average.

The problems are not particularly difficult and I feel the game is aimed at the less-experienced adventurer but as there are seven routes to winning, there could be many surprises in store.

Overall, The Philospher's Stone should appeal to most adventurers; it contains most of what we look for in an adventure. My only criticism is that it is rather expensive, considering some of the good adventures available at the moment and at much less cost.



A profession

Midi here, Midi there, Midi programs everywhere. Well, yes, but only if you have the proper computer. The favourite is undoubtedly the Commodore 64, for no other reason than there are more Commodore 64s in the world than any other computer. Software producers know they have a good user base at which to aim their software.

There are many other computers and many owners have been waiting, often in vain, for an enterprising software house to offer a Midi package. To the rescue of Amstrad computer owners everywhere there is EMR.

In our August issue we looked at some of the EMR BBC Midi software. One of its latest releases is a Performer program for Amstrad CPC464, 664 and 6128 computers. It is similar in many ways to other EMR Performer programs but it has one or two differences.

The Performer allows you to record on sequencer packages, which means you enter notes into the system live, as you play. That reveals all the little mistakes which generally go unnoticed. There is nothing worse than listening to a recording of your playing to make you realise how poor you are. All is not lost, however, because the Performer has ways and means of helping to tidy your recording.

Bridging that gap

The Midi Interface which bridges the gap between computer and synth has a Midi In, two Midi Outs and a Clock Start/Stop socket. It is attached to a ribbon cable which plugs into the cartridge slot so there is no bulge between the computer and the monitor. Two LEDs show when data is being received and transmitted.

All operations are controlled from a single menu screen which keeps things simple. Fashionable icons are used to describe the program functions and a plastic-covered sheet describing each icon acts as a Quick Screen Guide, but a few minutes' use and you will know what they all mean. Movement round the screen can be with either the cursor keys or a joystick.

With your Midi synth plugged-in, the first thing you will want to do is load and play the demonstration files. There were three rather brilliant demonstrations on the tape and an audio version, too. That included drums and what sounded like umpteen synths but which was probably only two – impressive indeed. Just the kind of thing to spur you to creations of your own.

The Performer allows you to record on up to eight tracks. You can think of them like the tracks on a multi-track tape recorder but you can do far more with digital tracks than with audio ones. The tracks are numbered down the left side of the screen and six control options are listed along the top – Play, Channel, Loop, Control, Pitch and Arrange.

Recording is a straightforward process and you can assign each track to a different channel. Unlike other Performer programs, this does not allow any Midi mode changes and is fixed in polyphonic mode. That is the mode in which 99 percent of synthesisers operate, so they should all work well. It also avoids any confusion over mono mode and multi-timbral instruments such as the Casio CZ synths and the JVC KB800. Multi-timbral instruments can sound more than one voice at a time and are ideally-suited to making Midi music on a budget, because you have four or more voices for the price of a single synth.

If your keyboard technique is not so polished as you would like, the Performer can help. First, you can record a piece slowly and speed it on playback to its proper tempo. Second, there is a Punch-In facility which lets you drop in to a track and continue recording from there. That prevents having to record the whole track again and it lets you extend an existing track.

Clever option

Another clever option is the Time Correct feature which will put notes on the beat as you play them. The resolution can be altered from quarter notes to 32nd notes and if you have already recorded a piece it is still possible to correct the timing by copying it to another track using the Track Merge facility.

Track Merge is the digital equivalent of audio bouncing tracks. It is not completely software-driven, as you have to plug the Midi Out socket into a Midi In socket. Having done that, you can merge up to seven tracks into one.

After a track is recorded you can make it Loop, in which case it will repeat on playback until the longest non-looping

al performer

The EMR Performer is an excellent value-for-money package which bridges the gap between Amstrad CPC computers and Midi-compatible instruments. Ian Waugh reports.

track has finished playing. You can use the feature to produce rhythm tracks.

The Control section lets you filter-out unwanted performance control data. The storage of effects such as Aftertouch (Pressure) and Velocity sensitivity requires plenty of bytes and their omission can save up to one-third of the memory of each track.

The Pitch option lets you transpose a track up or down by 12 semitones. If you want to transpose it further, repeat the process. Apart from its usefulness in arrangements, you can use it to play along with transposing instruments such as the trumpet and saxophone.

When your recording is complete you can alter the channel through which each track will play back. Normally you will set a different channel for each synth voice and you can mute individual tracks on playback if required.

A special function called Arrange takes the sequencing concept a stage further and lets you build a composition by making the tracks play in a certain order. You could have a repetitive bass riff on track one which you also want to use as an introduction. A rhythm accompaniment could be on track two and solo lines could be on tracks three, four and five. The arrangements follow the tracks set to Play on the menu screen, so the first thing to do would be to set track one to Play and mute the rest. The first arrangement, adding the rhythm, would then be tracks one and two. The second arrangement would be tracks one, two and three. The third could be tracks one, two and four, and so on. You can make up to 64 arrangements. It is very easy in practice and there is no way you could do anything like that with an audio recording – and retain your sanity.

On the right of the screen are other features which I will mention briefly. A metronome beat can be switched on or off. It plays through any instrument set to channel one and you can alter its pitch. You can set the number of beats count-in from 0 to 9. You can switch the clock from internal control to an external source, such as a drum unit. Tempo can be adjusted while a piece is playing, too. A piece can be made to repeat up to 255 times.

A beat in time

You can alter the time signature but as there is no traditional notation that is just to help you with your beat counts. A Text option lets you store a few words about the piece along with the music data. If you are anything like me and never keep paper records, although we all know we should, store the version number of the piece and what instruments are supposed to be playing on which tracks. It prevents a good deal of head-scratching and frustration. Finally, you can set the number of the bar from which you wish playback to start. Of course, you can load and save your music, verify a saved file and rename and delete a file on disc.

The EMR Performer is available on disc or cassette and costs £49.95. The Midi Interface is £79.90, so the two will cost £129.85. At the moment, there is no other Midi software for the Amstrad so comparisons, odious though they may be, can be made only with programs written for other computers. On that account, EMR scores very well, as both hardware and software are generally cheaper by up to 50 percent. Some of the other packages have more facilities, such as step-time input and greater editing control but EMR will be releasing separate packages to do that kind of thing and an Amstrad Editor, Notator, to print-out the music, and step-time Composer will be available around Christmas.

The Performer is excellent value and has many facilities to help get the most from real-time recording. It can be used by the professional, on stage, in the home and for educational purposes. A veritable boon for the Amstrad owner who wants to make the most of Midi.

Electromusic Research, 14 Mount Close, Wickford, Essex SS11 8HG. Tel: 0702 335747.

24 HOUR COMPUTER REPAIR CENTRE

*The only **AMSTRAD SPECIALISTS** recommended by Amstrad*

Repairs also undertaken for all the following computers:
SPECTRUM, COMMODORE, ATARI, BBC, IBM

NO HIGH FIXED PRICE REPAIR!

FREE SOFTWARE WORTH £35 WITH EVERY REPAIR

The established company with a proven reputation

Over the years we have built up an enviable reputation in the UK for computer repairs, which is second to none. This is based on many years experience in repairing Spectrum, Commodore, BBC and other leading makes – and we were the first AMSTRAD repair centre anywhere. **This is why we have customers all over the world.**

We are the best, forget the rest, look what we offer

- No high fixed price – you only pay what the repair actually costs.
- While-U-Wait Service – spare parts for all leading computers – available over the counter.
- State of the art test equipment to provide comprehensive test report and locate faults.
- Repairs to all leading makes of computer.
- Amstrad specialist.
- Spectrum rubber keyboards repaired for only £8.95.
- Commodore 64's, Vic 20's, Atari, Commodore 16's and Plus 4's repaired.
- Discounts for colleges, schools etc.
- Every computer repaired by us is completely overhauled and tested before return.
- All computers returned carriage paid and covered by insurance.
- Three months guarantee included.
- **Free Software worth £35 with every repair.**

DON'T DELAY – ACT TODAY It's as easy as ABC!

A Simply send your computer securely packed, together with a cheque or postal order for the maximum fee to the address below. Your computer will be repaired and returned to you within 24 hours together with the balance of the fee and your FREE £35 worth of software.

B Or if you prefer a written quotation just send £2.50 to cover post & packing.

C Alternatively just quote your Access or Visa card number.

AMSTRAD REPAIRS from **£9 to £35**

BBC REPAIRS from **£12 to £20**

SPECTRUM REPAIRS from **£7 to £19.90**

COMMODORE REPAIRS from **£12 to £35**

Trade orders welcome

SPECIALIST COMPUTER REPAIR CENTRE

28 College Street, WORCESTER WR1 2LS
Telephone: 0905-611072/613023

VISA Access

WE SET THE STANDARD BY WHICH EVERYONE ELSE IS JUDGED

DR LOGO

In this final part of Using Dr Logo, we look at one last example which makes use of most of the features which make Logo different from other languages such as Basic. Recursion, lists and property lists combine in this month's program. It is really only when you see these three made-for-each-other elements of the language working together that it is possible to appreciate the power of Logo.

In this month's example, lists and property lists are used to construct a complex – well, in other languages it is complex – data structure called a network and recursion is used as a very natural way of manipulating it. The resulting program using these techniques is usually referred to as a semantic net and has its origins in the esoteric field of artificial intelligence but it is great fun to use.

You can tell the program various pieces of information and ask it questions and it will answer them to the best of its ability. So long as you restrict your questions to the type about which it knows its answers are fairly convincing – see figure three for a sample dialogue.

The simplest form of information store records fast facts but for most purposes the relationships between the facts are what is important. A telephone directory may store the names and addresses of all the members of a family but it needs a diagram of the family tree to show who is related to whom. A piece of software which can record data and the relationships between the data is called a relational database, which works generally by using pointers to link items to form a network. A relational database, however, is not the final word in increased sophistication.

The links used by a relational database to associate one item of data with another are all of the same type. They are anonymous arrows or pointers which bind items of information together without indicating what causes them to be joined. That is obviously insufficient to represent the complexities of the world, since a human memory is very different because it links items with named relationships. In figure one the relationships between the items of information SAM, PERSON, HEAD, HAIR, SOFT and MALE are shown.

You can see that the relationship between SAM and PERSON is different from that between SAM and HEAD – SAM **IS A** PERSON but SAM **HAS** HAIR. The fact that the relationships IS A and HAS are different really becomes apparent only when the memory is being searched. If you want the question "DOES SAM HAVE HAIR" answered, then as well as looking at the item SAM for HAS relations you have also to examine the items connected to SAM by IS A relations. Thus the answer to "DOES SAM HAVE HAIR" is found by examining the HAS relationships from PERSON. That is:

```
SAM - - -IS A- - ->PERSON- - -
HAS- - ->HAIR
```

means that SAM has HAIR. That type of inference depends on the properties of the relationships involved and it is called property inheritance. It is property inheritance which allows us to follow a path through the memory consisting of similar items.

The type of memory, using named relationships, is called a semantic network. A general semantic network would have to be very complicated to represent much of the world but using Logo property lists it is very easy to implement a small demonstration semantic network.

To produce a program which will manipulate a system of items and named relations it is necessary first to solve the problem of how to represent the items and the named relationships. The simplest way is to create variables of the same name. Representing the relationships is slightly more difficult but it seems obvious that the property list of the variable concerned should be of some use.

We could use the property list by recording the names link so that the name is the property and the item to which it is connected is its value. To represent SAM HAS HEAD we would create a variable called SAM and store the property pair HAS HEAD in its property list, with HAS as the property name and HEAD as its value.

Using the property list in this way works well but there is a difficulty. You can use a property list to record more than one type of named relationship. SAM HAS HEAD and SAM IS A PERSON could be represented in a single property list:

```
SAM   [HAS HEAD IS A PERSON]
```

There may be more than one link of the same name and that is more difficult to represent. If you add SAM IS A MALE to the list of relationships it cannot be represented using the simple method described because the IS property can have only one value, either A PERSON or MALE. The problem can be solved by realising that a property list is a list of pairs of items; the first item is the property name and the second is the property value and that value can be any single data type, including a list or a list of lists and so on.

Thus the final method of representation is to use the property list to record the names of the relationships as property names and the items to which the relationships point are stored as a list which is the value of the property. The relationships SAM HAS A HEAD, SAM IS A PERSON and SAM IS MALE would be represented as:

```
SAM   [HAS [[A HEAD]] IS
[[A PERSON]] [MALE]]]
```

That looks complicated but there are still only two properties in the property list HAS and IS and their values are:

```
HAS   [[A HEAD]]
IS    [[A PERSON] [MALE]]
```

That is the value of each property is a list of lists.

Now that the problem of representing the structure of a semantic net has been solved, all that is left is to determine how information gets into it and how information can be retrieved. The simplest way of allowing the user to store information is via the English sentence construction:

```
x  relation  y
```

where x and y are items to be stored and connected by the link named "relation". For example:

```
SAM IS A PERSON
SAM IS MALE
SAM HAS HEAD
PERSON HAS HAIR
HAIR IS SOFT
```

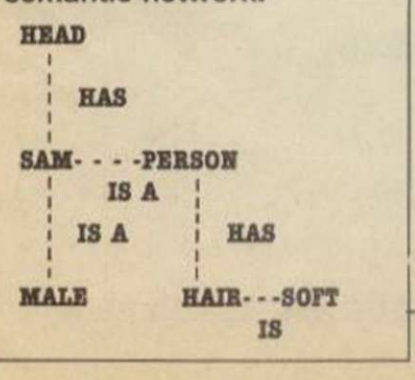
describe the information shown in figure one. Using this limited form of English ensures that it is possible for the program to separate x and y from the relation. The rule used is that the first word is item x, the last word is item y, and any words between form a description of the relationship.

Once information has been entered the memory is useful only if it can be used to answer questions about its contents. Using the form of representation described, it is possible to implement many types of question-answering routines but, to keep things simple, the program attempts only to handle the following three types of question:

```
TELL ME ABOUT x
DOES x HAVE y
IS x A y
```

Once again, because of the restricted format of those questions it is easy for the program to detect the type of question and the items mentioned in it. The first question is detected by the first word being TELL and the

Figure 1.
A semantic network.



Continued on page 66

Continued from page 65

last word is taken to be x; similarly the second and third questions are detected by the first word being DOES or IS respectively and the second word is taken to be x and the last word is taken to be y.

What happens when one of the three questions is detected varies according to the question. To answer the TELL ME ABOUT x question the program has to print-out a suitably formatted property list for the variable x. To answer the question completely the program should follow all of the relationships with x through all of the net. So the program response to TELL ME ABOUT x is to print every connection x has with everything else in the memory.

Implementing this search is a matter of recursion. If tell_inf :name is a procedure which will print the property list of variable :name you can search the entire network by making tell_inf call itself for each name in the property list of :name. The rough outline of tell_inf is:

```
to tell_inf :name
print the property list of :name for
each name in the property list
  tell_inf :newname
end
```

If you look at the tell_inf procedure in the program listing you should be able to understand what is happening. The only really difficult lines in the entire program are those like:

```
make "new_name item :k item :j
item :i :inf
```

where :inf contains the property list of a variable. That extracts the ith item, which is the list of lists of the property, the jth item of the list, which is a simple list, and then finally the kth item of this list which is a word. For example, if :inf is the property list of SAM and i is 4, j is 1 and k is 2 "new_name is set to PERSON as shown in figure two.

To answer the DOES x HAVE y question it is necessary not only to examine the direct HAS relationships but also the HAS relationships of items connected to X by IS A relationships. So DOES SAM HAVE HAIR would be answered by the following chain of relationships:

```
SAM - - -IS A- - -> PERSON
- - -HAS- ->HAIR
```

Similarly the IS x A y question has to be answered by following IS A relationships. If we add PERSON IS A HUMAN to the memory, the question IS SAM A HUMAN would be answered by the following chain of relationships:

```
SAM - - -IS A- - -> PERSON
- - -IS A- - ->HUMAN
```

The finished program can be seen in listing one and it is suitable for both versions of DR Logo but remember that if you are to type it into version two you will have to ignore the formatting of the procedures as explained in part one of the series. The purpose of each of the procedures used in the finished program can be seen in table one.

Figure 2. Extracting "new_name.

```
SAM          [HAS [[A HEAD]] IS [[A PERSON] [MALE]]]
   item i                       [[A PERSON] [MALE]]
   item j                        [A PERSON]
   item k                          PERSON
```

Table 1.

Procedure	Action
main	Get input and call the correct procedure
is	Get ready to answer IS A question
does	Get ready to answer DOES question
add_inf	Add information
tell_inf	Recursive part of answering TELL question
does_inf	Recursive part of answering DOES question
is_inf	Recursive part of answering IS A question
tell	Get ready to answer TELL question

The program described implements only a few of the possible relationships in a semantic net and yet it still behaves in an interesting way, as the following output indicates. For clarity, all the input data and questions are shown in upper-case and the computer responses are in lower-case. Note that the program is started by typing MAIN and it uses * as a prompt for input.

```
?MAIN
*SAM HAS A HEAD
*SAM IS A MALE
*SAM IS A PERSON
*PERSON HAS HAIR
*HAIR IS SOFT
*IS SAM A PERSON
yes
*DOES SAM HAVE A HEAD
yes
*HEAD HAS BLUE EYES
*PERSON IS HUMAN
*IS SAM HUMAN
yes
*DOES SAM HAVE BLUE EYES
yes
*DOES PERSON HAVE BLUE EYES
not as far as I know
*IS SAM SOFT
no
*QUIT
?
```

A great deal can be done to improve the program. It should be possible to recognise different categories or classes of objects in the store. SAM is a specific object but PERSON is a class to which other objects can belong. Such classes can, in theory, be detected by following IS A relationships.

You can also introduce new relationships and include them in question processing. SAM IS A PERSON implies that SAM has all the items PERSON has but the reverse is not true. In fact, the new relationship that is necessary is:

```
PERSON EXAMPLE IS SAM
```

Given that relationship, any items SAM HAS might also be items PERSON HAS. In this way you could arrange for the answer to DOES PERSON HAVE BLUE EYES to be AT LEAST SOMETIMES. If other examples of PERSON also proved to have BLUE_EYES you might feel justified to conclude that PERSON HAS BLUE EYES.

By experimenting with the program you will discover many ways of examining and re-organising the relationships between the items. There is one danger of which you should be aware while using the program – circular relationships. A relationship of the form SAM IS A PERSON and PERSON IS A SAM will cause endless trouble.

We hope that as a result of reading the series you feel that Logo is a language for more than just playing with turtle graphics. Logo graphics are fun but for a real challenge using lists and recursion effectively is difficult to beat.

LISTING ONE.

```
to main
label "start
 type "*
 make "inp rl
 if (first :inp = "quit) [go "out] []
 if (first :inp = "tell)
 [tell
  go "loop_end
 ]
 []
 if (first :inp = "does)
 [does
  go "loop_end
 ]
 []
 if (first :inp = "is)
 [is
  go "loop_end
 ]
```

```
 []
 add_inf
label "loop_end
go "start
label "out
end

to is
(local "inf1 "desc1 "ans "nam1)
make "nam1 item 2 :inp
make "inf1 plist :nam1
make "desc1 bf bf :inp
if (emptyp :inf1)
 [type [I don't know anything about]
  type char 32
  pr :nam1
 ]
 [make "ans is_inf :nam1 :desc1
  pr :ans
 ]
end

to does
(local "inf1 "desc1 "ans "nam1)
make "nam1 item 2 :inp
make "inf1 plist :nam1
make "desc1 bf bf bf :inp
if (emptyp :inf1)
 [type [I don't know anything about]
  type char 32
  pr :nam1
 ]
 [make "ans does_inf :nam1 :desc1
  pr :ans
 ]
end

to add_inf
(local "name "con "value)
make "name first :inp
make "con item 2 :inp
make "value gprop :name :con
make "value fput bf bf :inp :value
pprop :name :con :value
end

to tell_inf :name
(local "inf "i "j "k "ct1 "ct2 "new_name)
make "inf plist :name
make "ct1 (count :inf) / 2
make "i 2
repeat :ct1
 [
 make "ct2 (count item :i :inf)
 make "j 1
 repeat :ct2
  [
  type char 32
  type item :i - 1 :inf
  type char 32
  pr item :j item :i :inf
  make "k (count item :j item :i :inf)
  make "new_name item :k item :j item
    :i :inf tell_inf :new_name
  make "j :j + 1
  ]
  make "i :i + 2
 ]
end

to does_inf :nam2 :desc
(local "inf "ct1 "ct2 "ct3 "i
 "j "l "m "p "new_word)
make "inf plist :nam2
make "ct1 (count :inf) / 2
make "i 1
repeat :ct1
 [
 if (item :i :inf = "has)
  [make "ct2 (count item :i + 1 :inf)
   make "j 1
   repeat :ct2
   [
   if (item :j item :i + 1 :inf = :desc)
    [op "yes]
    []
   make "j :j + 1
   ]
  ]
  []
 make "i :i + 2
 ]
make "l 1
repeat :ct1
 [
 if or (item :l :inf = "is) (item :l :inf = "has)
  [make "m 1
   make "ct3 (count item :l + 1 :inf)
   repeat :ct3
    [
    make "p count item :m item :l + 1 :inf
    make "new_word item :p item :m item :l + 1 :inf
    make "res does_inf :new_word :desc
    if (:res = "yes) [op "yes] []
    make "m :m + 1
    ]
   ]
  []
 make "l :l + 2
 ]
op [not as far as I know]
end

to is_inf :name :desc
(local "inf "ct1 "ct2 "i "j "k "new_word)
make "inf plist :name
make "ct1 (count :inf) / 2
make "i 1
repeat :ct1
 [
  if (item :i :inf = "is)
  [make "ct2 (count item :i + 1 :inf)
   make "j 1
   repeat :ct2
    [
    if (item :j item :i + 1 :inf = :desc)
    [op "yes]
    []
    make "k count item :j item :i + 1 :inf
    make "new_word item :k item :j item :i + 1 :inf
    make "res is_inf :new_word :desc
    if (:res = "yes) [op "yes] []
    make "j :j + 1
    ]
  ]
  []
  make "i :i + 2
 ]
op "no
end

to tell
(local "nam1 "inf1)
make "nam1 item count :inp :inp
make "inf1 plist :nam1
if (emptyp :inf1)
 [type [I don't know anything about]
  type char 32
  pr :nam1
 ]
 [pr :nam1
  tell_inf :nam1
 ]
end
```

»Software Exchange«

ONLY **£1.99** + 40p post and packing per tape

Offering high-quality software at bargain basement prices is the aim of Software Exchange – a new service for *Your Computer* readers.

Each tape features two programs, either games or utilities, and each has been tested extensively by our staff.

At only £1.99 per tape, each program costs less than £1 – cheaper than the cheapest budget software.

Spectrum

TAPE SP09

HAL

Machine: Spectrum 48K
Program Type: Programming utility
Author: Jonathan Dye

HAL is a complete new language for the Spectrum 48K. Once compiled, HAL programs can be used as extensions to your own Basic programs by including LOAD CODE and RANDOMIZE USR instructions.

In addition to low-level arithmetic directives, most of the Spectrum sound and graphics commands have their equivalent HAL statements, making it particularly suitable for writing routines for fast-action games.

TAPE SP09

SURROUND

Machine: Spectrum 48K
Program Type: 2-player arcade
Author: Norwegian Software Design

This is a two-player version of the classic game of Surround. Written fully in machine code, the action is fast and furious. Each player controls a roving point leaving behind it a destructive light trail.

TAPE SP10

DATABANK

Machine: Spectrum 48K
Program Type: Business/Home use
Author: Christopher Lewis

This is not a database program but a databank, with the ability to hold up to 55 pages of information. Each page can be assigned a name of up to 25 characters and can hold up to 500 characters of information. The program includes all the necessary facilities to create, edit, save and load these fully-indexed pages.

TAPE SP10

POTTY POSTMAN

Machine: Spectrum 48K
Program Type: Arcade
Author: Mark Jones

In this game you must guide Paul the Potty Postman around Terror Lane to complete your round and save Paul's job.

Dogs are to be expected and Gnashalot is one of the worst. In addition, however, you will have to negotiate aliens, trees and even man-eating radios.

CBM 64

TAPE CBM09

TUG OF WAR

Machine: CBM64
Program Type: 2-player arcade
Author: Paul Randall

This two-player, keyboard-controlled game, will have you battling in a more friendly situation than the majority of computer games.

It is a game of fast reactions and co-ordination. Having taken the strain, each team must attempt to pull the other by pressing the appropriate key when the PULL sign lights. The first to hit his key gains the advantage but be careful of pulling too soon or your whole team to slip and fall.

TAPE CBM09

BRAG

Machine: CBM64
Program Type: Card simulation
Author: Lionel Jack

This is a complete simulation of the card game three-card Brag. You control one hand and must beat the other three hands, all controlled by the computer.

INSTRUCTIONS FOR USE

Software Exchange tapes are not supplied with any paper documentation – all instructions relating to the use of the software are provided as text files at the start of the programs.

To load the software the following instructions should be followed unless otherwise stated within the description of the software.

AMSTRAD CPC
Press CTRL – control key – while at the same time holding down the ENTER key.

CBM64
Press the SHIFT AND RUN/STOP keys.

SPECTRUM
Type LOAD"" then press the ENTER key.

BBC
Type CHAIN"" then press the RETURN key.

»Software Exchange«

CBM 64

TAPE CBM10

MINI-MON

Machine: CBM64
Program Type: Programming utility
Author: Simon Carter

Mini-Mon is a versatile code loader, with routines for saving, loading, viewing, printing, entering and check-summing both hexadecimal and decimal code.

You can enter code in hex or decimal, from any specified start address, with a variable number of bytes per line. A checksum can be added to this data, if required. Viewing gives the same options, with a variable scroll speed.

For the machine code programmer, this utility can be used in place of virtually every other code loader and is useful as a monitor.

TAPE CBM10

LIGHTNING STRIKE

Machine: CBM64
Program Type: Arcade
Author: John Taylor

Lightning Strike is a Scramble-type game where you must guide your attack helicopters through ever-decreasing caverns, past a barrage of enemy forces of helicopters and aircraft. Many of the routines are written in fast-action machine code, so the action is definitely fast. Your missiles will move up and down with your helicopter, so they can be guided on to their targets.

The game is controlled by joystick, and an exceptional feature allows the game to be changed for a second player. In this case, the opponent controls the enemy helicopter from another joystick.

Amstrad

TAPE AMS06

SECURED SYSTEM DATABASE

Machine: Amstrad
Program Type: Business/Home use
Author: R. Millward

This Amstrad database utility allows records with up to 16 fields. A new database file may be created, and field names of up to 20 characters can be given, which may be altered at a later date. Records may be added, altered or deleted, with up to 65 alphanumeric characters per field. Other facilities allowing conditional searching, browsing, saving and loading are also available.

One special feature of the program is that the user optionally may add a code and password to prevent other people accessing the data.

TAPE AMS06

SOUND DESIGNER

Machine: Amstrad
Program Type: Utility
Author: Jim Aboulzelof

This handy utility will help you create sounds for use in other programs, such as your favourite games. All the sound information is displayed on the screen, including all the Amstrad Basic sound commands. The appropriate values can be changed and heard using the cursor controls. Once you have created that perfect sound, the values may be printed or saved, for later loading back into the program. Full instructions are included.

BBC

TAPE BBC04

BIRD OF PREY

Machine: BBC B
Program Type: Arcade
Author: N. Sheard

In this game you take the part of an animated golden eagle with young on the nest. At each stage you must guide the eagle to collect two items of prey, represented by owls, fish, rabbits, mice, birds and bats. You must, however, be careful to avoid collisions with the background and other moving foreground objects.

This game is graphically and musically excellent. The graphics are colourful, being drawn and filled for each of the 20 stages, all of which must be completed before the young will leave the nest. The music is three-channel and interrupt-driven.

TAPE BBC04

KUNG-FU

Machine: BBC B
Program Type: Arcade
Author: David Chung

This is a martial arts program featuring punches, kicks and jumps. You play the *role of Lewis Lee, an apprentice of the* famous Martial Arts Club of Hongkong. You had just have your 'Masters' examination, and are about to celebrate, thinking you have fared exceptionally well. Unknown to you, your superiors are planning one final surprise test.

Though written in Basic, the program is extremely fast and even includes delay loops to make it playable. Of course, as with all our programs, they are unprotected, so you could easily remove these, if you consider yourself a real hero.

ORDER FORM

Please send me the following Software Exchange tapes (print tape reference number clearly).

_____

_____

Send orders to Software Exchange, 79-80 Petty France, London SW1H 9ED – please allow 28 days for delivery.

I enclose a cheque/Postal Order value £ ..... (please remember to add 40p p&p per tape).

NAME _____

ADDRESS _____

_____

Geared towards the needs of industry.

Garth Hill School

The only computer at Garth Hill School, Bracknell three-and-a-half years ago was a Research Machines 380-Z. Today it has more than a quarter of a million pounds worth of equipment, some donated by industry but a good deal paid for by fund-raising events by pupils, parents and members of the local community.

Once in danger of closing because of rapidly-falling rolls, the school has now doubled its intake and is acclaimed internationally as Europe's leading exponent of information technology in the school environment.

A computer centre, housing 19 BBC microcomputers, was the school's first major computer venture. When it was partially complete, Prestel decided to use the school as a venue to launch its first European telephone link. The resulting publicity led to Acorn deciding to use Garth Hill as a test bed for new products and the centre was soon fully-equipped.

More and more people became interested in the school. Japanese television recorded a documentary about it and the BBC television program Micro Live was so impressed that an entire program was recorded there.

In addition to Acorn, which still has close links with the school, recently providing an Econet Level 3 hard disc system, several other companies have donated equipment including software, touchpad equipment and disc drives. Educational software for most subjects is available via the terminals in the centre and all the students can work there and learn more about computing from an early age.

In their first two years, all pupils attend computer awareness courses, designed to give a gentle introduction to information technology. In the third year they study an IT business course before choosing their final options for the fourth year.

Stanley Goodchild, pioneering Garth Hill headmaster, is aiming for a school of excellence. "By that I do not mean one which contains only the most able pupils but one in which, whatever a student's ability, all available talents are fully-exploited. That way, when the pupils leave, they are as well equipped as possible to deal with the problems they are likely to encounter in a working environment," he says.

Garth Hill has converted one of its classrooms into a high-tech office so that pupils may become familiar with the type of equipment used in the fast-changing office environment. Pupils from the third year onwards, studying any of the school's business and information technology courses, gain experience of word processing, data processing, business computing and electronic mail, in addition to the more traditional subjects such as typing, audio-typing and general office management. Goodchild explains:

"We believe all our pupils, on leaving school, will require keyboard skills in their work. The traditional idea of the business studies room is one where there are rows upon rows of typewriters and that is often divorced from the real world. Our high-tech office is based on a completely different concept. It has been developed after close consultation with the world of industry and commerce. We believe it is a more realistic way of preparing young people for the modern world."

Apple aid

A separate room houses 18 Apple Macintosh business computers. It was built and equipped as a joint project between Garth Hill, the Manpower Services Commission and Apple Computers, which not only provided all the equipment but also offered advice on the design of the room. It allows some of the older pupils to gain experience of running professional software packages, such as they would use in a modern office. Younger pupils also use the machines and find the WIMP environment easier to use.

Garth Hill believes in keeping close links with industry. As with many other schools, pupils can spend time on work experience but, unusually, some of the staff are also encouraged to attend in an attempt to keep up-to-date with the latest developments in their areas.

There are also strong links with the local community and other schools in the area. A bus containing 14 microcomputers travels round the area, taking a taste of new technology to those outside the school and many local firms send speakers to Garth Hill to talk to pupils as part of a government-funded Technical Vocational Education Initiative scheme.

Garth Hill has been involved in the research and development of many systems, including a major database dedicated to schools. The Times Network for Schools is a low-cost communications network containing information of interest to schools and educational establishments. Based on the public electronic mail and noticeboard service offered by Telecom Gold, TTNS has a central database built from educational and outside resources. resources.

For an annual all-inclusive fee of £187, a school has unlimited access to the network. That represents a considerable saving for schools compared to other commercial databases which charge for each minute on-line and for storage of data.

Several pupils attending the school have personal computers at home. Parents were enthusiastic about TTNS and enquired about the possibility of having their own database containing information about the school. That led to the parents' database being established in August, 1985.

Communications software and modems at greatly-subsidised prices were provided by the school to encourage parents to log on to the system. Information about school sports fixtures and events for parents and pupils, as well as the school prospectus and diary, are available on the database.

parents' database is planned, as are many projects which will help to make the curriculum relate to the needs of industry and commerce. They include a new drama studio where pupils may gain experience of computerised lighting systems, a high-tech library and two VAX machines for studying CAD programs.

Main objective

In addition, this month a £300,000 research project into school administration starts. With so much technology in operation, some people may be inclined to regard Garth Hill as a factory, producing hundreds of computer operators each week. The headmaster, however, is adamant that other subjects in the curriculum do not suffer as a result of the commitment to computers in education.

"It is not our aim to produce programmers. Our objective is to make full use of information technology as part of the teaching and learning process. That will ensure that our pupils are better-equipped to find jobs," he says.

There can be little doubt that the system works. Three years ago more than 30 pupils failed to find jobs before September. Last year the figure fell to two.

Jeff Naylor.

The road to opportunity

We asked Jeff Naylor for advice for those seeking computing careers.

To establish a career in computing many people believe you need many science-based qualifications. While such a background will certainly not damage your chances of finding a job in the computer industry, such a statement cannot be considered completely true. Jeff Naylor took O levels in a broad range of subjects, including commerce, French and English literature. He then studied for A levels in technical drawing, Spanish, economics and mathematics, and he is now senior tutor for the BSc course in computing science at Thames Polytechnic.

His interest in computers began when his A level mathematics teacher found a dusty old computer in a cupboard and challenged him to write some programs. After a little practice, he managed to produce simple routines to create sequences of flashing lights. An interest began which was to shape the rest of his career.

Naylor decided to look for a suitable course of study. "At the time, there were few universities offering computer science courses in a practical form. I wanted a course which included vocational training, something geared towards the needs of industry. I spoke to my headmaster, who knew very little about computing but was able to recommend three polytechnics well-known for their work in that area," he says.

Study options

He applied to Teeside and Wolverhampton but North Staffordshire, at the time with the best polytechnic computing science course, accepted his application and he began to study there for his first degree in 1967.

The course had much in common with many others. Lectures on and high- and low-level languages, operating systems and IBM assembler formed much of the early work and Naylor went on to study options in simulation and data transmission.

During his third year he won a sponsorship from the National Coal Board and spent a year working in the systems development and evaluation section. "It is not uncommon for undergraduates studying computing degrees to find some form of sponsorship and I found the course I had been studying, with its heavy emphasis on practical programming skills, was very relevant to the work I had to do," he says.

He finished his vocational training and returned to the polytechnic, where he gained a first-class honours degree. He was then employed full-time by the Coal Board to design software to support a long-distance data transmission network.

At that time, many new applications for computers were being found and the industry was expanding rapidly. More and more people wanted to become familiar with the new technology and the educational establishments soon found that there was a shortage of people able to teach computing at a sufficiently high level to satisfy the demand. Many universities and polytechnics appealed to previous students and, as a result, Naylor returned to North Staffordshire as a lecturer.

Although he had no teaching experience, he proved to be a success and climbed the careers ladder steadily to more senior positions. While lecturing, Naylor studied for his MSc. That involved considerable investigation and some pure research into computer evaluation techniques and virtual memory systems.

After that, he joined a team of consultants developing a full Cobol compiler conforming to Level 2 ANSI 1974 in a collaborative project with GEC Computers Ltd. As he was still lecturing at the polytechnic, all the work had to be done in his spare time and it was almost five years before the compiler was completed.

"Writing a compiler program is something very few people have the chance to do and I am glad and proud that I had the opportunity. All companies keep their compiler programs secret, so our team had to work from the beginning – an even greater challenge," he says. In return, North Staffordshire was provided with £130,000 worth of computers by GEC.

After 12 years of lecturing at North Staffordshire, Naylor decided that it was time to move to gain more experience in other areas. He joined Thames Polytechnic as senior lecturer in September, 1984. Since then, in addition to all his teaching and administrative duties, he has become very active with the British Computer Society. He joined in 1975 and was appointed a Fellow in 1985. He is especially involved with the new Young Professionals' group.

Working party

"The society is very concerned about its younger members, as that is where its future lies. Many join as student members and, on graduation, find that they are too young to be eligible for full membership and simply drop out. The forming of the group is a major initiative by the BCS, dedicated to the 18-30-year-olds with its separate committee. It is hoped that many young computer professionals will take the opportunity to join," he says.

Naylor was chairman of the working party which defined and launched the Young Professionals' group and also chaired the three-day inaugural conference for the group, which included such speakers as Brian Oakley of Alvey and Ray Reardon of IBM. He is also a member of the BCS board of examiners and has been an examiner for part one of general paper one.

Since January, 1984, he has been a member of the working party organising and judging the BCS student programming competition and hopes shortly to join the council of the Society, where he will campaign further for the need of younger members.

Naylor is also involved with the revision of the BTEC guidelines for the submission of higher-level courses in computer studies and information technology.

He gives advice regularly to people wishing to follow a career in computers. "If you do not have a degree, you should study a full- or part-time course in computing. That will prove that you have a certain amount of ability and the necessary amount of commitment to move into the industry. Even for those with a degree in a non-computing subject, studying a short course is still the best way to demonstrate that you are committed to this type of work," he says.

Recently he finished writing a book, *Introduction to Programming*. It is aimed at first-year students on degree and HND courses in computing and is part of a new series to be published by Pitman. He prefers not to make long-term plans and instead reacts to opportunities as they arise. His overall advice to anyone wishing to move into computing is to keep their options open. "What is needed to succeed in computing is a logical mind, not stacks of academic qualifications," he says.

The members of Bournemouth Area Computer Club are never short of activities.

Seaside seminars

With more than 65 active members between 10 and 80 years old, Bournemouth Area Computer Club is large by any standard. Its meetings are held on the third Wednesday of each month at a local community centre which plays host to more than 70 clubs and associations. The club chairman, Bob George, says that the key aim is to promote knowledge of the ways in which computers may be used in applications other than playing games.

Most club members own Atari and *Commodore* machines but recently many members have begun buying computers in the Amstrad CPC range.

In the body of the club, two smaller user groups exist dedicated to those two machines. They meet on separate nights to exchange software or discuss problems which are common to their particular models of computer. At the moment those groups exist only for Commodore and Atari machines but because of the growing number of users, an Amstrad group is expected to start in the very near future.

The regular monthly meetings for all members are usually attended by around 30 people. Speakers from outside the club are invited to discuss the way in which computers are used in their industries or professions. One evening featured a member of Dorset police force, who presented a talk and slide show on the way computers are used by the police.

Radio hams

At another a member of Bournemouth Amateur Radio Society detailed the way in which it found computers useful. A representative of Enterprise Computers also visited the club and gave a demonstration of the latest model.

Many members are professional programmers, operators or hold jobs in the software industry. They, too, sometimes give talks and will give advice to the other members of the club when needed.

Although, as with most clubs, the members are predominently male, the Bournemouth club does its upmost to encourage female members to attend and the few who do are regular visitors. There are no restrictions to joining the club and the £6 annual subscription covers the hiring of the hall for the main club and the smaller user groups.

Young and old are encouraged to join and it is hoped that all will find something of interest. The oldest member, rumoured to be aged around 80, finds that using a computer helps to keep his fingers and mind active while the younger members enjoy writing programs or playing games.

George and other members of the club are not completely against games; they just think it vital that all computer users are fully aware of the potential their computers have for performing a wide range of other tasks and it is that philosophy which they hope to extend to other members of the community.

Visiting time

In the last few weeks a few members have travelled to many of the public libraries in the area to give demonstrations of computer programs ranging from *Counting with Cuthbert*, a educational game, to *Tasword*, the word processing package. That resulted from asking permission to advertise the club; the library supervisor enquired if it would be possible for programs to be demonstrated at the library so that people with limited knowledge of computers could become more aware of their capabilities.

The first session attracted a large attendance, which included staff from other libraries. One invitation led to another and now the club is busy on a regular basis, educating member of the public in the finer points of basic computing technology. The mini-exhibitions are held on Saturday mornings, considered to be the time when most parents are taking children to the library and both are encouraged to participate in the demonstration which it is hoped will generate sufficient enthusiasm to cause the parent to buy a computer and for both to join the club.

On a lighter note, the club stages competitions and fun evenings every so often. A recent computer treasure hunt involved solving a rhyming clue and collecting a set of 12 numbers. A short program then had to be entered to a computer and the numbers entered to produce more numbers. The final figures were matched with the correct answers at the next club meeting and the winner received a prize.

Other competitions have involved designing a Christmas card, using any graphics and drawing aids available, and well-known personalities from a local radio station were invited to do the judging. The latest competition plans involve designing a logo to be used for club advertising.

Now the club is busy planning a Home Computer Exhibition to be held on September 21. "Many people in the Bournemouth area rarely have the chance to see any of the shows or exhibitions linked to computing, as most are held either in London or Birmingham. We have decided to give local people the chance to learn more about computing," says George.

Local astronomy and amateur radio groups will also be at the show, demonstrating the way they use computers to help with their hobbies. George is also hoping that several software companies will attend to give sneak previews of their latest products.

Bournemouth must certainly be one of the most active clubs in the country. George says that his main aim is to "stimulate an interest in computing for all".

Anyone wishing to join should contact Bob George on 0202 510495.

COMPUTER WAREHOUSE

1000's OF BARGAINS FOR CALLERS

THE "ALLADINS' CAVE OF COMPUTER AND ELECTRONIC EQUIPMENT

HOT LINE DATA BASE

DISTEL®

The **ORIGINAL FREE OF CHARGE** dial up data base. Buy, browse or place **YOUR OWN AD** for goods or services to sell. 1000's of stock items, spares and one off bargains. Updated daily.
ON LINE NOW. CCITT, 8 bit word, no parity.
For **300** baud modems call 01-679 1888
For **1200-75** baud modems call 01-679 6183

FREE Your monitor from its computer!! For only £29.95 it becomes a **SUPERB HIGH QUALITY * COLOUR * TV SET**

The fabulous **TELEBOX**, an **INVALUABLE MUST** for the owner of **ANY** video monitor with a composite input, colour or monochrome. Made by a major UK Co. as a **TOP QUALITY**, stand alone **UHF** tuner and costing **OVER** £75 to manufacture, this opportunity to give your monitor a **DUAL FUNCTION** must not be missed!! The **TELEBOX** consists of a compact, stylish two tone charcoal moulded case, containing ALL electronics tuner, power supply etc to simply plug in and convert your previously dedicated computer monitor into a **HIGH QUALITY COLOUR* TV SET**, giving a real benefit to ALL the family!! Don't worry if your monitor doesn't have sound– **THE TELEBOX** even has an integral 4 watt audio amplifier for driving an external speaker, **PLUS** an auxiliary output for superb quality television sound via your headphones or **HI FI** system etc. Other features include: Compact dimensions of only 15.75" w x 7.5" d x 3.5" h, latest technology, **BRITISH** manufacture, fully tuneable 7 channel push button tuner, Auto **AGC** circuit, **SAW** filter, LED status indicator, fully isolated 240v AC power supply for total safety. Mains ON-OFF switch etc. Many other uses.

LIMITED QUANTITY– DON'T MISS THIS OFFER!!!

ONLY £29.95 OR £24.95 if purchased with **ANY** of our video monitors. Supplied **BRAND NEW** with full instructions and 2 YEAR warranty. Post and packing £3.50 *When used with colour crt.

COLOUR & MONOCHROME MONITOR SPECIALS

'SYSTEM ALPHA' 14" COLOUR MULTI INPUT MONITOR
Made by the famous **REDIFFUSION Co.** for their own professional computer system this monitor has all the features to suit your immediate and future requirements. Two video inputs: **RGB** and **PAL** Composite Video, allow direct connection to **BBC/IBM** and most other makes of micro computers or **VCR's**, including our very own **TELEBOX**. An internal speaker and audio amp may be connected to computer or **VCR** for superior sound quality. Many other features: PIL tube, Matching **BBC** case colour, Major controls on front panel, Separate Contrast and Brightness – even in **RGB** mode. Separate Colour and audio controls for Composite Video input, **BNC** plug for composite input, 15 way 'D' plug for **RGB** input, modular construction etc.etc.
This Must Be ONE OF THE YEAR'S BEST BUYS. PC USER
Supplied **BRAND NEW** and **BOXED**, complete with DATA and 90 day guarantee. **ONLY £149.00** as above **OR IBM PC** Version **£165.00**
15 Day 'D' skt **£1.00**, **BNC** skt **75p** **BBC** interface cable **£5.50**

DECCA 80 16" COLOUR monitor. RGB input.
Little or hardly used manufacturer's surplus enables us to offer this special converted **DECCA RGB** Colour Video TV Monitor at a super low price of **only £99.00**, a price for a colour monitor as yet unheard of!! Our own interface, safety modification and special 16" high definition PIL tube, coupled with the **DECCA 80** series TV chassis give 80 column definition and quality found only on monitors costing **3 TIMES OUR PRICE**. The quality for the price has to be seen to be believed!! Supplied complete and ready to plug direct to a **BBC MICRO computer** or any other system with a **TTL RGB** output. Other features are: internal speaker, modular construction, auto degaussing circuit, attractive TEAK CASE, compact dimensions only 52cm W x 34 H x 24 D, 90 day guarantee. Although used, units are supplied in **EXCELLENT condition.**
ONLY £99.00 + Carriage.

DECCA 80, 16" COLOUR monitor. Composite video input. Same as above model but fitted with Composite Video input and audio amp for **COMPUTER, VCR** or **AUDIO VISUAL** use. **ONLY £99.00** + Carr.

REDIFFUSION MARK 3, 20" COLOUR monitor. Fitted with standard 75 ohm composite video input and sound amp. This large screen colour display is ideal for SCHOOLS, SHOPDS, DISCO'S, CLUBS and other AUDIO VISUAL applications. Supplied in **AS NEW** or little used condition **ONLY £145.00** + Carr.

BUDGET RANGE EX EQUIPMENT MONOCHROME video monitors.
All units are fully cased and set for 240v standard working with composite video inputs. Units are pre tested and set up for up to 80 column use. Even when MINOR screen burns exist – normal data displays are unaffected. 30 day guarantee.
12" KGM 320-1 B/W bandwidth input, will display up to 132 x 25 lines. **£32.95**
12" GREEN SCREEN version of KGM 320-1. Only **£39.95**
9" KGM 324 GREEN SCREEN fully cased very compact unit. Only **£49.00**
Carriage and insurance on all monitors £10.00

DC POWER SUPPLY SPECIALS

GOULD OF443 enclosed, compact switch mode supply with DC regulated outputs of +5v @ 5.5a, +12v @ 0.5a, −12v @ 0.1a and −23v @ 0.02a. Dim 18 x 11 x 6 cm. 110 or 240v input **BRAND NEW** only **£16.95**. Call sales office for details.
GOULD G6-40A 5v 40 amp switch mode supply **NEW £130.00**
AC-DC Linear PSU for **DISK** drive and **SYSTEM** applications. Constructed on a rugged ALLOY chassis to continuously supply fully regulated DC outputs of +5v @ 3 amps, −5v @ 0.6 amps and +24v @ 5 amps. Short circuit and overvoltage protected. 100 or 240v AC input. Dim 28 x 12.5 x 7 cm **NEW £49.94**
Carriage on all PSU's £3.00

KEYBOARDS

Manufacturer's BRAND NEW surplus.
DEC LA34 Uncoded keyboard with 67 quality gold plated switches on X-Y matrix – ideal micro conversions etc. **£24.95**
AMKEY MPNK-114 Superb word processor chassis keyboard on single PCB with 116 keys. Many features such as On board Micro, Single 5v rail, full ASCII coded character set with 31 function keys, numeric keypad, cursor pad and 9600 baud SERIAL TTL ASCII OUTPUT!! Less than half price
Only £69.00 with data. Carriage on Keyboards £3.50

DON'T MISS THE CPM Deal OF the CENTURY

The FABULOUS CPM TATUNG PC2000 Professional Business System

A cancelled export order and months of negotiation enables us to offer this professional **PC. CPM** system, recently on sale at **OVER £1400**, at a **SCOOP** price just over the cost of the two internal disk drives!! Or less than the price of a dumb terminal!!

Not a toy, the **BIG BROTHER** of the **EINSTIEN** computer, the **DUAL PROCESSOR PC2000** comprises a modern stylish three piece system with ALL the necessities for the **SMALL BUSINESS, INDUSTRIAL, EDUCATIONAL** or **HOBBYIST USER**. Used with the THOUSANDS of proven, tested and available CPM software packages such as **WORDSTAR, FAST, DBASE2** etc, the **PC2000** specification, at our prices, **CANNOT BE BEATEN!!**

The central processor plinth contains the **64K, Z80A** processor, **DUAL TEAC 55F 5¼"** Double sided **40/80** track disk drives (**1 Mb** per drive), **PSU, 4K** of memory mapped screen RAM, disk controller, **RS232, CENTRONICS** and system expansion ports, and if that's not enough a ready to plug into **STANDARD 8" DRIVE** port for up to **FOUR 8"** disk drives, either in double density or **IBM** format. The ultra slim **92** key, detachable keyboard features 32 user definable keys, numeric keypad and text editing keys, even its own integral microprocessor which allows the main **Z80A** to devote **ALL** its time to **USER** programs, eliminating "lost character" problems found on other machines. The attractive, detachable 12" monitor combines a green, anti-glare etched screen, with full swivel and tilt movement for maximum user comfort. Supplied **BRAND NEW** with **CPM 2.2**, user manuals and full 90 day guarantee. Full data sheet and info on request.

PC2000 System with CPM Etc. COST OVER £1400
NOW only £399

PC2000 Business System with CPM and 'Ready to Run' FAST Sales and Purchase ledger, supports up to 9000 Accounts, VAT etc. COST OVER £1700
NOW only £499
Carriage & Insurance £12.00

PC2000 Wordprocessor System with CPM and TEC FP25 daisywheel printer
NOW only £799

SURPLUS SPECIALS ON PRESTEL – VIEWDATA – TELEX

PLESSEY VUTEL, ultra compact unit, slightly larger than a telephone features **A STANDARD DTMF TELEPHONE** (tone dial) with 5" CRT monitor and integral modem etc. for direct connection to **PRESTEL, VIEWDATA** etc. Designed to sell to the EXECUTIVE at over £600!! Our price **BRAND NEW AND BOXED** at only **£99.00**
DECCAFAX VP1 complete Professional **PRESTEL** system in slimline desk top unit containing Modem, Numeric keypad, CPU, PSU etc. Connects direct to standard RGB colour monitor. Many other features include: Printer output, Full keyboard input, Cassette port etc. **BRAND NEW** with DATA. A **FRACTION OF COST** only **£55.00**
ALPHATANTEL. Very compact unit with integral **FULL ALPHA NUMERIC** keyboard. Just add a domestic TV receiver and you have a superb PRESTEL system and via **PRESTEL** the cheapest **TELEX** service to be found!! Many features: **CENTRONICS** Printer output, Memory dialling etc. Supplied complete with data and DIY mod for **RGB** or Composite video outputs. **AS NEW** only **£125.00**
Post and packing on all PRESTEL units £8.50

EX-STOCK INTEGRATED CIRCUITS

4164 200 ns D RAMS 9 for £11 4116 ns £1.50 **2112** £10.00 **2114** £2.50 **2102** £2.00 **6116** £2.50 EPROMS **2716** £4.50 **2732** £3.00 **2764** £4.95 **27128** £5.50 **6800** £2.50 **6821** £1 **68A09** £8 **68B09** £10 **8085A** £5.50 **8086** £15 **8088** £8 **NEC765** £8 **WD2793** £28 **8202A** £22 **8251** £7 **8748** £15 **Z80A** DART £6.50 **Z80A** CPU £2.00. Thousands of IC's **EX STOCK** send SAE for list.

DISK DRIVES

Japanese 5¼" half height, 80 track double sided disk drives by **TEAC, CANON, TOSHIBA** etc.
Sold as **NEW** with **90 day** guarantee **ONLY £85.00**
TEC FB-503 Double sided HH 40 TRK **NEW £75.00**
SUGART SA400 SS FH 35 TRK **£55.00**
SIEMENS FDD100 SS FH 40 TRK **£65.00**
carriage on 5¼" drives £5.50
Brand NEW metal 5¼" **DISK CASES** with internal **PSU.**
DSKC1 for 2 HH or 1 FH drive **£29.95** +pp £4.00
DSKC 2 for 1 HH drive **£22.95** +pp £3.50
DKSC 3 As DSK1 LESS PSU **£12.95** +pp £2.50
DSKC 4 As DSK2 LESS PSU **£10.95** +pp £2.00
8" **IBM** format **TESTED EX EQUIPMENT.**
SHUGART 800/801 SS **£175.00** +pp £8.50
SHUGART 851 DS **£250.00** +pp £8.50
TWIN **SHUGART 851's** 2 Mb total capacity in smart case, complete with PSU etc. **£595.00**
MITSUBISHI M2894-63 8" DS 1 Mb equiv. to **SHUGART SA850R. BRAND NEW** at **£275.00** +pp £8.50
DYSAN 8" Alignment disk **£29.00** + pp £1.00
Various disk drive PSU's **Ex Stock SEE PSU section.**
HARD DISK DRIVES
DRE/DIABLO Series 30 2.5 Mb front load **£525.00**
Exchangeable version **£295.00. ME3029** PSU **£95.00**
DIABLO 44/DRE4000A, B 5+5 Mb from **£750.00**
CDC HAWK 5+5 Mb £795.00. CDC 9762 80 Mb RMO3 etc. **£2500.00.**
PERTEC D3422 5+5 Mb **£495.00**
RODIME 5¼" Winchesters ex-stock from **£150** CALL
Clearance items – Sold as seen – No guarantee.
ICL 2314 BRAND NEW 14" Mb Removable pack hard disk drive, cost over **£2000** with data **ONLY £99.00**
BASF 6172 8" 23Mb Winchesters **£199.00**
Unless stated all drives are refurbished with 90 day guarantee. Many other drives and spares in stock – call sales office for details

MODEMS

Join the communications revolution with our super range of **DATA MODEMS**, prices and specifications to suit all applications and budgets.....
BRAND NEW State of the art products.
DACOM DSL2123 Multi standard 300-300, 1200-75 Auto answer etc. **£268.00**
DACOM DSL2123AQ Auto dial, smart modem with multi standard AUTO SPEED detect, and data buffer with flow control etc. **£365.00**
DACOM DSL2123GT The CREAM of the intelligent modems, auto dial, auto call, index, buffer etc. etc. **£498.00**
Steebeck SB1212 V22 1200 baud FULL DUPLEX, sync or async, optional auto dial **£465.00**
TRANSDATA 307A Acoustic coupler 300 baud full duplex, originate only, RS232 interface **£49.00**

Ex **BRITISH TELECOM** full spec, CCITT, ruggedised, bargain offers. Sold TESTED with data. Will work on any MICRO or system with RS232 interface.
MODEM 13A 300 bauc unit, only 2" high fits under phone, CALL mode only **£45.00**
MODEM 20-1. 75-1200 baud. Compact unit for use as subscriber end to **PRESTEL, TELECOM GOLD, MICRONET** etc. **£39.95** +pp £6.50
MODEM 20-2 1200-75 baud. Same as 20-1 but for computer end **£65.00** +pp £6.50
DATEL 2412. Made by SE Labs for BT this two part unit is for synchronous data links at 1200 or 2400 baud using **2780/3780** protocol etc. Many features include 2 or 4 wire working, self test, auto answer etc. **COST OVER £600.** Our price **ONLY £199** +pp £8.00
DATEL 4800, RACAL MP84800 baud modem, EX BT good working order, **ONLY £295.00** +pp £8.00

SPECIAL OFFER
MODEM TG2393. Ex BT, up to 1200 baud, full duplex 4 wire or half duplex over 2 wire line. **ONLY £85.00 PER PAIR** +pp £10.00

For more information **contact our Sales Office.**

MATRIX PRINTERS

SPECIAL BULK PURCHASE of these compact, high speed matrix printers. Built in Japan for the Hazeltine Corporation this unit features quality construction giving 100cps bidirectional, full pin addressable graphics, 6 type fonts, up to 9.5" single sheet or tractor paper handling, RS232 and CENTRONICS parallel interface. Many other features. **BRAND NEW** and **BOXED**. COST £420. **Our price Only £199.00**

RECHARGEABLE BATTERIES

Dry Fit MAINTENANCE FREE by Sonnenschein & Yuasa.
A300 07191315 12v 3Ah NEW **£13.95**
A300 07191312 6v 3Ah NEW **£9.95**
A300 07191202 6-0-6v 1.8Ah TESTED Ex Equip **£5.99**

VDU TERMINALS

Standard VDU data entry terminals at give away prices!!
QUME QVT108. Current product, state of the art terminal with detachable keyboard, 12" Green screen, 2 page **RAM, TVI 925**, Hazeltine, **ADMSA** emulations, software setup, 25 x 80, Clock, Swivel and tilt base, Printer port, Function keys etc. **BRAND NEW** and **BOXED AT ALMOST HALF PRICE** Only **£425.00**
AJ510 – EX RENTAL. Z80 controlled, 15" green screen 24 x 80 display, graphics, cursor addressing, printer port etc. Very good condition **TESTED** complete with manual only **£225.00**
ADDS 520 – Dumb terminal, used, 12" b/w screen RS232 interface and printer port. **TESTED. ONLY £125.00.** Carriage on terminals £10.00
100's of other terminals in stock, CALL for more details.

DISPLAY ELECTRONICS

All prices quoted are for U.K. Mainland, paid cash with order in Pounds Sterling PLUS VAT. Minimum order value **£2.00**. Minimum Credit Card order **£10.00**. Minimum BONA FIDE account orders from Government Depts., Schools, Universities and established companies **£20.00**. Where post and packing not indicated please ADD £1.00 + VAT. Warehouse open Mon-Fri 9.30-5.30. Sat 10.30-5.30. We reserve the right to change prices and specifications without notice. Trade, Bulk and Export

32 Biggin Way, Upper Norwood, London SE19 3XF
Telephone 01-679 4414 Telex 894502 Data 01-679 1888

MICRO MAIL

53 FENNEL STREET
MANCHESTER M4 3DU
TEL: 061 834 5780

AMSTRAD

	RRP	OUR PRICE
CPC 6128 – Colour	£399	£379
CPC 6128 – Green	£299	£284
PCW 8256	£459	£439
PCW 8512	£574	£549
RS 232 for 464/664/6128	£49.95	£44.95
RS 232 for PCW 8256/8512	£69.95	£59.95
DMP 2000	£159.95	£149.95
SSA1 Speech Synthesiser	£29.95	£26.95
MP2 – Modulator	£29.95	£26.95
JY2 – Joystick	£14.50	£12.50
Modem –	£136.85	£126.00
PCW 8256 Modem & Sage Software	£189.95	£172.00
	each	Box of 10
CF2 3" Discs	£3.99	£37.50
	each	Box of 10
CF200 3" Discs	£5.99	£55.00
FDI – 2nd Disc Drive	£89.95	£84.95
DDI – Disc Drive	£159.95	£149.95

AMSTRAD CPC6128/PCW 8256/ PCW 8512 SOFTWARE

Personal Assistant	£94.95	Touch 'n' Go	£24.95
Pocket Wordstar *(please state whether for 6128 or 8256)*	£99.95	Mastercalc 128	£34.95
		Pyradev	£29.95
		Protext	£26.95
Flexifile/Flexiwrite	£49.95	Promerge	£24.95
Supercalc 2	£49.95	Prospell	£24.95
3D Clock Chess	£19.95		

SHOWROOM NOW OPEN

SAGESOFT

Pop. Accounts	£99.99
Pop. Accounts/ Payroll	£149.95
Pop. Accounts Plus	£149.95
Payroll	£69.95
Invoicing/Stock Control	£69.95
Database	£69.95
Chit Chat E. Mail	£69.95
Chit Chat Viewdata	£69.95
Magic Filer	£69.95
Retrieve	£69.95
Accounts Super Combo	£199.95

HISOFT

Pascal 80	£39.95
Devpac 80	£39.95
"C"	£39.95

Keyboard Tutor	£24.95
Pocket Cash Trader	£99.95
Masterfile II	£33.00
Microfile/ Microword	£49.95
Bridge Player	£19.95
Hitch Hikers' Guide to the galaxy	£28.95

LESS 10% DISCOUNT

CAMSOFT

Stock Control	£49.95
Payroll	£49.95
Invoicing	£49.95
Database	£49.95
PSIS Stock, Inv. & Sales	£99.95
PSIL Stock, Inv., Sales, Pur, Nom.	£149.95

CAXTON

Cardbox	£99.99
Scratchpad Plus	£69.95
Brainstorm	£49.95
Touch 'N' Go	£24.95
Smartkey	£49.95

DIGITAL RESEARCH

DR Draw	£49.95
DR Graph	£49.95
Basic Compiler	£49.95
Pascal MT +	£49.95

Printer Extension Cable 8256/8512	£12.95
Covers	
8256/8512 set	£12.95
6128 set	£12.95
464 set	£12.95
256K Expansion kit for 82556	£49.95

DEDUCT 10% DISCOUNT WHEN ORDERING SOFTWARE
JUST SEND YOUR CHEQUE OR P.O. WITH A NOTE STATING WHICH TITLE YOU WANT.
Post and Packing: ***FREE.*** **ALL** Computers ADD £6 for value **UNDER £250**
All payments cheque or P.O. to: I. M. PRIESTLEY
ALL PRICES INCLUSIVE OF VAT

Leading computers in Belgium

ATARI
ACORN COMPUTER
commodore
sinclair
Schneider AMSTRAD

The English Computer Shop

Willem Ogierplein 2
B 2000 Antwerp
Tel. 03/233 59 06

Rue Grétrystraat 31
B 1000 Brussels
Tel. 02/218 60 26

MIDLAND COMPUTER LIBRARY

do you use Software ?

now you can hire it before you buy it!

- **OVER** 8000 different titles available for hire for the **SPECTRUM, COMMODORE, ELECTRON, BBC, AMSTRAD, ATARI,** and **MSX** computers.
- **ARCADE, ADVENTURE, EDUCATIONAL** and **BUSINESS** software too.
- **HIRE PRICES** from only 75p **INC. P&P.**
- **20% DISCOUNT** off all software purchases.
- **LIFE MEMBERSHIP £6.00.** Hire your first title FOC.
- **FREE CATALOGUE.**
- **FREE HINTS AND TIPS.**
- **FAST RETURN OF POST SERVICE** (if reserves are given).
- **ALL GAMES** manufactured **ORIGINALS** with full documentation.
- **OVER** 25,000 satisfied members.
- **EUROPEAN** members welcome.
- **UP TO 65% OFF** software, regular sales lists sent to all members.
- Full computerised system keeps track of your order. We pride ourselves in being the most professional Hire Library in the United Kingdom, with staff of 14 who knows what the word service means. Backed by our own software company and programmers.

MIDLAND COMPUTER LIBRARY
28 College Street, Worcester WR1 2LS Tel: 0905 611072

Send now for free catalogue stating which computer.

NAME _____
ADDRESS _____
YC

Thank you to Epson

You know how it is. First you cosset and nurture your new computer. Then after a time you forget what an uncomplaining little asset it is. You leave it switched on, grumble when it does not understand but, worst of all, you forget its intrinsic value and leave it exposed to the less-principled classes.

So it was with my Epson HX-20 which had served me well for two years. Rashly I did not bother to insure it, and, even worse, left it in the car where those self-same unprincipled classes could see it. They took it without asking me.

I was halfway through a piece of research work for a national magazine and most of the data was compiled on the HX-20, so the loss of my machine was disastrous to say the least. I was hard up and things looked grim. In desperation I wrote to the Epson Corp. telling of my plight.

Incredibly, 10 days later, Epson sent me a new HX-20. It was only on loan but, after all, it was my fault that I lost the original.

It is pleasant to know that at least one computer company still has the capacity for compassion. I would like to thank Epson and wonder if anyone knows of any other manufacturer which would do, or has done the same?

Jeremy Torr,
Telford.

Points for posting

In the July edition of *Your Computer*, J. Pieroux of Wiltshire complained about the difficulties he experienced in trying to return an item to another mail order firm. My company has maintained a very strong position in the mail order market for almost four years, by taking great pains to give customers cause to trust our service. For that reason, I hope that Pieroux and other readers will feel able to accept guidance from us.

First, if you have cause to return goods for a refund, sending them by recorded delivery is a waste of money. The Post Office pays compensation of up to £18 in respect of goods lost in the ordinary mail, whether the package was sent by RD or not. The most important point is to ask the Post Office for a Certificate of Posting, which is issued free.

If the goods are then lost, the certificate enables you to prove that you posted them and in those circumstances, under the Mail Order Code of Practice of the Advertising Standards Authority, the firm to which you returned them must not only pay compensation but also refund your postage.

If it does not, you can complain, without charge, to the ASA, which in turn can threaten to ban that firm's advertising unless it honours the payment. Of course, it would be reasonable to provide the firm with a photocopy of the Certificate of Posting, so that it, in turn, can chase the Post Office for its compensation.

If the goods are worth more than £18, you have two choices. You can either send them as a Compensation Fee parcel, which is cheap and takes only two working days, or as a Registered Letter, which is often quicker but more expensive.

The important point to remember is not to bother with Recorded Delivery which gives no additional benefits.

Harry Whitehouse,
Peaksoft,
Nottingham.

A cutting remark

I am writing to correct the impression given by your reviewer that the responses to input in the adventure game, *The Price of Magik*, are peculiar. If he had checked he would have found that a poniard is a dagger. Therefore, entering the phrase "Attack werewolf with dagger" when the weapon is not in your possession would generate the correct response: "You can't see the poniard".

Margaret Austin,
Level 9 Computing.

Apollo – not quite a PC clone

I was horrified to see a photograph of the Apollo DN3000 in the July edition of *Your Computer* captioned "We could not find a picture of the IBM/AT – instead we show one of the many clone machines."

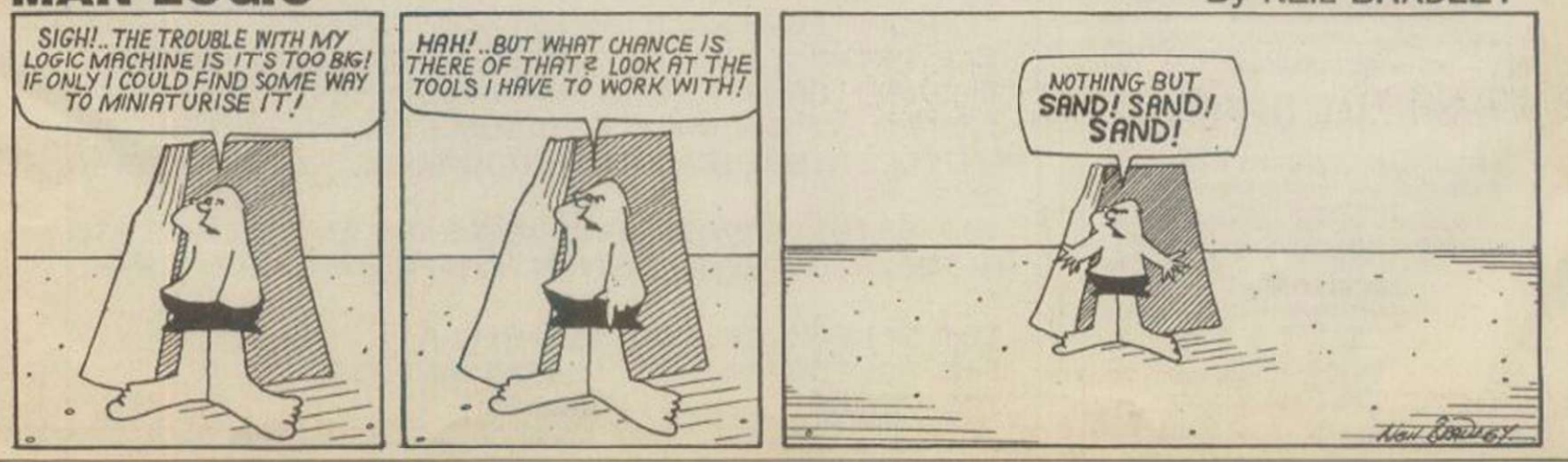
Our DN3000 is about as near a clone of the PC/AT as a Porsche is of a Mini. Although the appearance of the two machines is similar, the technical specifications are very different. To name a few, the 3000 uses a 32-bit Motorola 68020 processor and MC68881 floating point co-processor, runs at 12MHz and has a palette of 4,096 colours with graphics-assistant hardware.

By comparison, the IBM PC/AT uses a 16-bit Intel 80286 processor, runs at 6MHz, and has a palette of 64 colours. Our machine is fully-compatible with all current applications including CAP, AI, factory automation and computer-aided software engineering. Finally, while the IBM PC/AT costs around £3,000, the Series 3000 computers have a starting price of slightly more than £9,000.

Jeanne-Marie Richards,
Apollo Computer (U.K.) Ltd.

MAN LOGIC

By NEIL BRADLEY



MICRO MARKET

ALL IN STOCK

BBC SPECIALISTS

S. P. ELECTRONICS

Amstrad 6128 Green £299.00	Colour £399.00
Amstrad 8256	£458.00
CPA 80 Printer (inc. cable)	£199.00
Disc Operating System BBC	£96.00
Full Cumana range	From £89.00
ACORN 1770 DFS	£49.95
G3 WHO RTTY PROGRAM (TAPE)	£7.50
G3 WHO RTTY PROGRAM (EPROM VERSION)	£20.00
Circuit board for RTTY decoder Mk 3 (inc. instructions)	£7.00
CANNON Dot Matrix 160cps NLQ	£299.00
Joysticks (pair) self centering + analogue	From £17.95
Printer Cable (Centronics)	£12.90
Speech Synthesis	£55.00
Disc Doctor	£33.00
WORDWISE Word Processor	£39.00
Cumana CD800S 40/80 psu	£250.00

FULL REPAIR SERVICE AVAILABLE

Wide selection of software, books, leads, plugs, etc. SAE for full list. All available Mail Order

All prices apply while stocks last — carriage extra

48 Linby Road, Hucknall, Notts. NG15 7TS

Tel: 0602 640377

All prices include VAT

MODEMS

NIGHTINGALE COMSTAR BBC

£139

NIGHTINGALE 8256/8512 + AMSTRAD INTERFACE + CHIT CHAT, E-MAIL OR VIEWDATA

£192.50

Prices inc. VAT and carriage

JOHN HOLMES COMPUTERS

FULBECK, GRANTHAM, LINCS

TEL: (0400) 72818

SPECTRUM — AMSTRAD — COMMODORE — MSX — ATARI — DRAGON — ORIC — EINSTEIN — MSX — ATARI

NOBLES COMPUTER REPAIRS

* Repairs carried out by our own engineers on site.
* All repairs carry a 4 MONTH GUARANTEE

For estimates phone or send your computer to NOBLES.

Spectrum Plus ..... £16.95 inc parts post and pack

Commodore 64/VIC 20 ..... from £9.95 plus parts

BBC ..... from £18.95 plus parts

Also repair specialists for Amstrad and MSX computers

NO HIDDEN CHARGES

★SPECIAL OFFER

5 FREE GAMES WORTH £25

with each Spectrum repair Trade/School and Club discounts arranged.

*For free, no obligation estimates phone or send your computer to **NOBLES** for the fastest, cheapest repairs in ESSEX.

NOBLES

14-17 Eastern Esplanade

Southend-on-Sea

Essex

0702 63377/8

63336/7/8/9 (Ask for Derek)

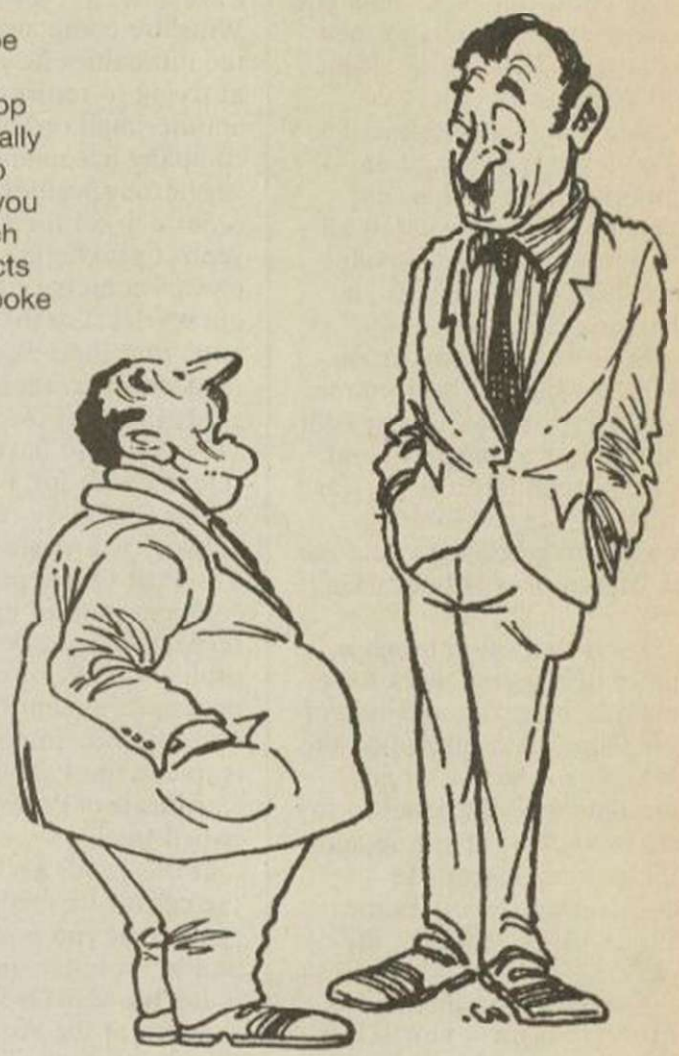
7 days a week, 24-hour Answering Service

SPECTRUM — AMSTRAD — COMMODORE — MSX — ATARI — DRAGON — ORIC — EINSTEIN — MSX — ATARI

DOUBLE HEIGHT

◆ *Commodore 64* ● *Paul Greensted*

A demonstration program which shows how, using the POKE command, characters of double height may be produced on the Commodore 64. When printed on the screen, the top half of a character is printed normally but the bottom half is reversed. To achieve the double-height effect, you have to print the lines twice in each mode. Demonstrations of the effects are given in varying colours. The poke command used would be a useful sub-routine when writing text or introduction for any program.



```
0 REM
1 REM    DOUBLE HEIGHT CHARACTER PROG
2 REM
3 REM         FOR THE COMMODORE 64
4 REM
5 REM           BY  PAUL GREENSTED
6 REM
 REM     MAIN LINES FROM 104 TO 113
8 REM
10 POKE5322,28:POKE53280,0:POKE53281,0
100 PRINT"[CLR][HOME][CYN]PLEASE[RIGHT]WAIT
":PRINT"[RVS][C]PLEASE[RIGHT]WAIT"
101 PRINT"[DOWN][C6]TEST 012345689.":PRIN
T"[RVS][GRN]TEST[RIGHT]012345689."
102 PRINT"[DOWN][C=3]DOUBLE[RIGHT]HEIGHT[RI
GHT]OF[RIGHT]EACH[RIGHT]CHARACTER[RIGHT]0-6
3"
103 PRINT"[RVS][RED]DOUBLE[RIGHT]HEIGHT[RIG
HT]OF[RIGHT]EACH[RIGHT]CHARACTER[RIGHT]0-63
"
104 POKE52,48:POKE56,48:CLR
105 POKE56334,PEEK(56334)AND254
106 POKE1,PEEK(1)AND251
```

PROGRAM LISTINGS

```
10 C12288:V3248
108 FORT0TO63:QT*8+V:KT*8+C
109 FORY1TO8:A(Y)PEEK(Q-1+Y):NEXT:B=1
110 FORP0TO:POKEK+P,A(B):BB+.:NEXT
111 FORP0TO:POKEK+P+1024,A(B):BB+.5:NEXT
:NEXT
112 POKE1,PEEK(1)OR4
113 POKE56334,PEEK(56334)OR1
114 PRINT"[DOWN][YEL]WRITTEN BY PAUL GREENS
TED 121985."
115 PRINT"[RVS][C1]WRITTEN[PIGHT]BY[RIGHT]
PAUL[RIGHT]GREENSTED[RIGHT]121985."
116 PRINT"[DOWN][WHT]PRESS ANY KEY"
11 PRINT"[RVS]PRESS[RIGHT]ANY[RIGHT]KEY"
118 POKE198,0:WAIT198,1
119 PRINT"[CLR]"
120 PRINT"[C]ABCDEFGHIJKLMNOPQRSTUVWXYZ"
121 PRINT"[BLU][RVS]ABCDEFGHIJKLMNOPQRSTUVW
XYZ"
122 PRINT"{DOWN][C3}012345689"
123 PRINT"[RVS][RED]012345689"
124 PRINT"{DOWN][B6]!#$%&'()+-\@*^:_<
[]"
125 PRINT"[RVS][GRN]!#$%&'()+-\@*^_<[
]"
126 PRINT"[DOWN][WHT]PRESS ANY KEY"
127 PRINT"[RVS]PRESS[RIGHT]ANY[RIGHT]KEY"
8,1
129 PRINT"[CLR][BLU]FOR THE NEP CHARACTER S
ET USE"
130 PRINT"[C][RVS]FOR[RIGHT]THE[RIGHT]NEW
[RIGHT]CHARACTER[RIGHT}SET[RIGHT]USE"
131 PRINT"[RED]POKE5322,28"
132 PRINT"[C3][RVS]POKE5322,28"
133 PRINT"[GRN]TOP HALF OF CHARACTERS ARE
    NORMAL."
134 PRINT"[C6][RVS]TOP[RIGHT]HALF[RIGHT]OF
[RIGHT]CHARACTERS[RIGHT]ARE[RIGHT]NORMAL."
135 PRINT"[BLU]BOTTOM HALF ARE IN REVERSE"
136 PRINT"[C=][RVS]BOTTOM[RIGHT]HALF[RIGHT
]ARE[RIGHT]IN[RIGHT]REVERSE"
13 PRINT"[RED]SO YOU PRINT LINES TWICE IN
EACH MODE."
138 PRINT"[C3][RVS]SO[RIGHT]YOU[RIGHT]PRIN
T[RIGHT]LINES[RIGHT]TWICE[RIGHT]IN[RIGHT]EA
CH[RIGHT]MODE."
139 PRINT"[GRN]BREAK THE PROGRAM AND LIST T
O SEE HOW I"
140 PRINT"[CYN][RVS]BREAK[RIGHT]THE[RIGHT]P
ROGRAM[RIGHT]AND[RIGHT]LIST[RIGHT]TO[RIGHT]
SEE[RIGHT]HOW[RIGHT]I"
141 PRINT"[BLU]HAVE USED THIS METHOD."
142 PRINT"[C=][RVS]HAVE{RIGHT}USED[RIGHT]T
HIS[RIGHT]METHOD."
143 GOTO143

READY.
```


For details of this new section for advertisers please call PAUL MONAF 01-222 9090

THE PERSONAL QUIZ PACKAGE

How intelligent are you? Do you think verbally, numerically or visually? Can you improve your problem-solving ability?

Are you an Ivan the terrible or a Machiavelli? Competitive or lazy? A leader or a follower? Popular or boring – and why?

Personal Quiz is more than just a game. It is a package of tests which allow you to quantitatively assess your intelligence and personality – and other people's!

YOUR TOUGH SIDE assesses your drive, competitiveness and management ability. YOUR TENDER SIDE analyzes your personal interactions and social skills. The INTELLIGENCE TESTS give an overall IQ score and also measure your verbal, numerical and viduo-spatial ability. They are timed and scored with precision normally impossible with self-administered tests. THE 'X' FACTOR generates an infinite variety of questions of different types and can be played competitively not just for fun but to improve your rapid thinking skills.

The tests were designed by a consultant with extensive experience of personnel evaluation in a large-company environment. Results are displayed in screen printouts and bar charts. You will be able to measure your abilities and compare them with those of friends, family and colleagues.

The Personal Quiz Package can be used for serious self-assessment, for individual amusement, and as a party game.

Available from good software stockists now for

BBC B COMMODORE 64+128 ELECTRON

Or order direct from us at no extra charge by ticking the box and mailing with your name, address and cheque/PO to **COLISOFT, 9 Northmoor Road, Oxford OX2 6UW.** *Please supply:*

☐ Personal Quiz cassette for BBC/ELECTRON ..... **£9.95 incl.**
☐ Personal Quiz cassette for COMMODORE 64/128 ... **£8.95 incl.**

***RRP includes p&p, VAT. Stock orders despatched by return post. Trade enquries to Mr Jack 0865-514215**

WDSoftware

FOR THE SINCLAIR QL:

JOSS £15 on mdv or 5¼" flp, £17 on 3½" flp
Forget syntax errors and mistyped names in file commands! Just move a cursor and press SPACE. Cursor keys or joystick allow access to up to 8 microdrives and all the discs your interface will handle, with up to 150 files on each. Scroll & print directories, COPY, DELETE or PRINT any file, select TV or Monitor mode before LOADing/RUNning a program. Use keyboard only to set date or label a medium. Easy to use with Psion or other software. No silly icons to learn – JOSS will tell you what it's doing! Mass copying/printing utilities and programmer's toolkt. Specify disc size, tracks and interface (CST, Cumana, PCML, MicroPeripherals) or microdrive only.

RefQL7 £11 on 2 mdvs or 1 3½" flp, £9 on 5¼" flp
For use with ARCHIVE 2, contains 1300 useful QL references and a search/print program. Find programs, articles and reviews buried in the magazines on your shelf! Cheap updates of earlier editions.

Mdv Extension Cable (8") **£5.50**
Add ZX Microdrives to your QL.

Joystick Adaptor **£4.99**

FOR THE QL, SPECTRUM (ALL), BBC & ELECTRON:

WD Morse Tutor £4 cass, £6 mdv or 5¼", £8 3½"
Teach yourself to read Morse Code. From absolute beginning to 18 words/minute. Feedback on screen or printer. Random letters, numbers or mixed, 100 random sentences, many helpful features include phonetic speech via Currah Micro-Speech (Spectrum). Discs unsuitable for BBC B+.

FOR THE SINCLAIR SPECTRUM (48/128K):

WorDfinder 2 **£8 on cassette**
16,000 word vocabulary, 3 to 10 letters long.

WorDfinder 3
£10 on mdv or 5¼" disc, £12 on 3½"
19,000 word vocabulary, 3 to 12 letters long. Solves anagrams and missing-letter words. Very fast machine code. Update WorDfinder 1 for £2.

Spectrum Disc Versions are Opus, TR (Beta) and SPD1.

We export hardware and third-party software. Ask for lists.

Payment: In advance, in STERLING on British bank branches, International Giro, Postal Order or ACCESS/MasterCard. Add £1 outside Europe for AIRMAIL.

WDSoftware (YC), Hilltop, St Mary, Jersey, C.I. Tel: 0534 81392

DUST COVERS

AMSTRAD PCW 8256 £11.95

Light grey 3 piece set, monitor and printer piped in green, name on keyboard.

AMSTRAD CPC 6128/464/664 £6.95

Matching proofed nylon, treated with anti-static inhibitor. Red Piping on monitor cover.
AMSTRAD CPC on keyboard cover.
Please state model. Colour or Mono.

Tatung Einstein £7.50

One piece cover for monitor and keyboard in proofed light grey nylon. Piped in red with name on keyboard.

BBC MASTER £5.95

Made from beige proofed nylon, piped in brown, with BBC MASTER hot-foil printed on keyboard.

Matching covers for Printers

DMP2000 Amstrad, Brother HR5, M1009, Canon PW 1080A, Epson FX 80, RX 80, LX 80, Mannesmann MT-80, Shinwa CP 80, CPA-80, Taxan KP810, Tatung TP100. All £4.50. Brother HR15, Juki 6100 at £5.50. Large range of other covers also available on request.

Dept YC

BBD COMPUTER DUST COVERS
THE STANDISH CENTRE, CROSS STREET,
STANDISH, WIGAN WN 9RP
Telephone: 0257 422968

VISA

COMPUTER REPAIRS

ALL MACHINES DESPATCHED WITHIN 72 HOURS OF RECEIPT

For example:

Spectrum Plus	£17.00
16-48 RAM Upgrade	£25.00
ZX81	£12.50
Interface 1	£18.00
ZX Microdrive	£16.50
BBC B (not D.F.S.)	£25.00

(All prices include: parts, VAT, labour, return postage insured, and full warranty)

For a fast and reliable service send machine, brief description of fault and cheque or PO for relevant amount to the experts:

CAPITAL COMPUTER SERVICES
Dept P
Unit K2, Cardiff Workshops
Lewis Road, East Moors
Cardiff CF1 5EG
Tel: Cardiff (0222) 461801

We also service Acorn, Dragon, Commodore, Lynx and Oric systems. Please telephone for a quote.

DISCOUNT COMPUTERS

Examples:	ex.vat	inc.vat
BBC Master 128	£400	£460.00
AMSTRAD PCW 8256	£379	£435.85
AMSTRAD PCW 8512	£475	£546.25
AMSTRAD CPC 6128 colour	£325	£373.75
All 'SAGE' & 'CAXTON' software		10% off
COMMODORE PC10/20		10% off
COMMODORE AMIGA systems		10% off
PACE/CUMANA Disc Drives from	£90	£103.50
PHILIPS TV1114 TV/Monitor	£170	£195.00
MICROVITEC Monitors		10% off
MANNESMANN Printers		10% off
CANON Printers		10% off
EPSON Printers		10% off
JUKI Printers		10% off
SHINWA Printers		10% off

All prices inc. p&p

WILLOW SOFTWARE (YC)
The Willows, Wrington Lane,
Congresbury, BRISTOL BS19 5BQ
Telephone: (0934) 834056

Many others available: Please ask for a quote.

TICK TOCK

```
  1 REM tick-tock
  2 GO TO 400
 10 RESTORE : CLEAR 39999:
    FOR n=0 TO 51: READ a:
    POKE 23300+n,a: NEXT n
 19 REM specify the wheel
 20 LET r=50: REM wheel radius
 30 LET p=PI/10: REM tooth
    pitch
 40 LET a=7: LET b=2: LET w=p/3
    : REM tooth depths & width
    angle
 99 REM 1st wheel position
100 PLOT 86,117 : DRAW -6,10:
    DRAW 90,-10,-2: DRAW -9,
    -9: REM lever is drawn
110 PLOT 82,123: DRAW 64,-6,
    -1.3
120 LET n=w: GO SUB 500:
    REM wheel is drawn
130 PLOT 100,150: DRAW 0,-7:
    PLOT 100,130: DRAW 0,-18:
    PLOT 100,27: DRAW 0,-27
140 PLOT 100,150: DRAW 54,0,-1:
    DRAW 0,-12: PLOT 154,124:
    DRAW 0,-12: PLOT 154,28:
    DRAW 0 ,-28: GO SUB 800:
    REM stand is drawn
150 RANDOMIZE USR 23300: CLS :
    REM drawing is saved
199 REM 2nd position
200 PLOT 89,113: DRAW -7,9:
    DRAW 90,0,-2: DRAW -7,-9
210 PLOT 84,119: DRAW 86,0,-1.3
220 LET n=-w: GO SUB 500
230 PLOT 100,150: DRAW 0,-10:
    PLOT 100,128: DRAW 0,-9:
    PLOT 100,28: DRAW 0,-28
240 PLOT 100,150: DRAW 54,0,-1:
    DRAW 0,-10: PLOT 154,128:
    DRAW 0,-16: PLOT 154,25:
    DRAW 0,-25: GO SUB 800
250 RANDOMIZE USR 23308: CLS
299 REM 3rd position
300 PLOT 93,108: DRAW -9,9:
    DRAW 90,10,-2: DRAW -6,-10
310 PLOT 88,116: DRAW 83,9,-1.3
320 LET n=0: GO SUB 500
330 PLOT 100,150: DRAW 0,-14:
    PLOT 100,123: DRAW 0,-10:
    PLOT 100,25: DRAW 0,-25
340 PLOT 100,150: DRAW 54,0,-1:
    DRAW 0,-7: PLOT 154,130:
    DRAW 0,-15: PLOT 154,27:
    DRAW 0,-27: GO SUB 800
350 RANDOMIZE USR 23316
399 REM recall the drawings
400 RANDOMIZE USR 23324
410 BEEP .005,-1: PAUSE 10
420 RANDOMIZE USR 23332
430 RANDOMIZE USR 23340
440 BEEP .005,0: PAUSE 12:
    GO TO 400
499 REM draw wheel sub-routine
500 CIRCLE 127,70,40
510 CIRCLE 127,70,10
520 CIRCLE 127,70,4
530 CIRCLE 127,140,2
540 FOR n=n TO 2*PI STEP p
550 LET c=COS n: LET s=SIN n
560 LET cp=COS (n+p):
    LET sp=SIN (n+p)
570 LET cw=COS (n+w):
    LET sw=SIN (n+w)
580 PLOT 127+r*c/2,70+r*s/2
590 PLOT 127+r*c,70+r*s
600 DRAW a*c,a*s
610 DRAW (r+b)*cw-(r+a)*c,
    (r+b)*sw-(r+a)*s
620 DRAW -b*cw,-b*sw
630 DRAW r*(cp-cw),r*(sp-sw)
640 NEXT n: RETURN
699 REM m/code
700 DATA 33,0,64,17,64,156,24,
    38
710 DATA 33,0,64,17,152,183,24,
    30
720 DATA 33,0,64,17,240,210,24,
    22
730 DATA 33,64,156,17,0,64,24,
    14
740 DATA 33,152,183,17,0,64,24,
    6
750 DATA 33,240,210,17,0,64
760 DATA 1,0,24,237,176,201
800 PRINT AT 21,10;
    "          ": RETURN
```

◆ *Spectrum* ● *G. Jackson*

Tick Tock produces a simple but realisting simulation of a rotating cog, complete with ticking sounds. After typing-in the listing, the program must be saved so as to auto-run line 10. The sequence begins with the computer drawing two separate wheel and lever positions. Switching between the two creates the illusion of rotation.

PLANETS

◆ *Amstrad* ● *A. Balmforth*

Planets is a short but interesting demonstration of colour-cycling on the Amstrad computer. Four spherical shapes rotate in different directions against a background of scrolling stars. As the game is written entirely in Basic, the initial calculation can take some time but, once completed, the result is entertaining.

```
10 INK 0,0:MODE 0:PEN 15:INK 15,24,8:ENT -
1,1,5,1:ENV 1,3,5,1,1,0,8,10,-1,10:ENV 2,3,
4,1,1,0,8,10,-1,10:GOSUB 6000
20 PRINT TAB(6) "ANIMATION"
30 DEFINT x,y,r,h,w,d,n:x=75:y=351:r=39:til
t=-PI/6:no=20:no2=3:GOSUB 1000
40  x=595:y=369:r=29:tilt=-5*PI/4:no=10:no2
=2:GOSUB 1000
50  x=310:y=200:r=156:tilt=7*PI/6:no=25:no2
=6:GOSUB 1000
60  x=100:y=-116:r=351:tilt=0:no=50:no2=14:
GOSUB 1000
70 GOSUB 5000:GOSUB 3000
80 INK 1,25:INK 2,10:ORIGIN 0,0
90 FOR i%=9 TO 14:INK i%,0:NEXT
100 SOUND 135,0:GOSUB 7010
110 WHILE INKEY$=""
120 FOR i%=3 TO 8
130 j%=i%-1:IF j%=2 THEN j%=8
140 INK j%,10:INK i%,25
150 INK j%+6,0:INK i%+6,15
160 FOR del=1 TO 100:NEXT
170 NEXT
180 WEND
190 SPEED WRITE 1:SAVE "!animat.scn",b,&C00
```

PROGRAM LISTINGS

```
0,&3FFF
200 GOTO 110
1000 ' SPHERE SUBROUTINE
1010 ORIGIN x,y
1020 DEG:FOR phi=0 TO 180 STEP 360/(PI*(r*2
))*2
1030 PLOT r*SIN(phi),r*COS(phi),2:DRAW r*SI
N(360-phi),r*COS(360-phi),2:NEXT
1040 col%=3:RAD
1050 FOR phi=0 TO 3.1 STEP 3.1/no
1060 '
1070 h=r*COS(phi):w=r:d=0:alpha=PI/2+tilt:b
eta=PI/2:GOSUB 2000
1080 col%=col%+1:IF col%=9 THEN col%=3
1090 NEXT
1100 col%=1
1110 FOR theta=0.5 TO 2.5 STEP 2.5/no2
1120 h=-r/4*SIN(theta):w=r*SIN(theta):d=r*C
OS(theta):alpha=tilt:beta=1.5:GOSUB 2000
1130 NEXT
1140 RETURN
2000 ' ARC SUBROUTINE
2010 s=SIN(alpha):c=COS(alpha)
2020 x=w*SIN(beta):y=d+h*COS(beta)
2030 MOVE c*x+s*y,c*y-s*x
2040 FOR gamma=-beta TO beta+0.1 STEP 0.25
2050 x=-w*SIN(gamma):y=d+h*COS(gamma)
2060 DRAW c*x+s*y,c*y-s*x,col%
2070 NEXT
2080 RETURN
3000 ' PATH SUBROUTINE
3010 x=589:y=50:r=40:col%=9
3020 FOR tilt=0 TO 1.2 STEP 0.05
3030 GOSUB 4000
3040 x=0.9*x+39:y=0.5*y+170.5:r=r*0.92
3050 col%=col%+1:IF col%=15 THEN col%=9
3060 NEXT
3070 RETURN
4000 ' SQUARE SUBROUTINE
4010 ORIGIN x,y
4020 s=SIN(tilt):c=COS(tilt)
4030 MOVE r*(c+s),r*(c-s)
4040 DRAW r*(c-s),r*(-c-s),col%:DRAW r*(-c-
s),r*(s-c),col%
4050 DRAW r*(s-c),r*(c+s),col%:DRAW r*(c+s)
,r*(c-s),col%
4060 RETURN
5000 ' STARS SUBROUTINE
5010 ORIGIN 0,0
5020 FOR i%=0 TO 40
5030 x=639:y=9.5*i%:x1%=-2*(2+(INT(RND*2)+1
)):y1%=1-(INT(RND*3)):col%=(RND*6)+8
5040 WHILE x>=0:col%=col%+1:IF col%=15 THEN
 col%=9
5050 p%=TEST (x,y):IF p%=0 THEN PLOT x,y,co
l%
5060 x=x+x1%:y=y+y1%
5070 WEND
5080 NEXT
5090 RETURN
6000 ' music routine
6010 READ tone,length:IF tone=9999 THEN RES
TORE:GOTO 6010
6020 SOUND 1,tone,length,0,2:SOUND 2,tone/3
,length,0,1:SOUND 4,tone*2,length,0,2
6030 ON SQ(1) GOSUB 6010
6040 RETURN
6050 DATA 319,48,338,16,379,48,338,16,319,3
2,284,32,253,32,319,32
6060 DATA 239,32,253,32,284,32,319,32,338,3
2,379,32,338,32,426,32
6070 DATA 319,48,338,16,379,48,338,16,319,3
2,284,32,253,32,190,32
6080 DATA 213,16,253,48,284,48,253,16,319,9
6,0,32,0,250,9999,9999
7000 ' sound routine
7010 SOUND 7,RND*50+50,200,15,0,1
7020 ON SQ(1) GOSUB 7010
7030 RETURN
```


ACCOUNTS + PAYROLL

For Commodore 64, 128, 8000 Series etc. and larger computers

Very comprehensive but easy to use.

Available on 21 days approval.

Also contract programming

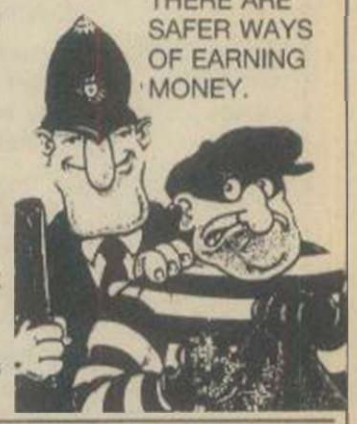
ELECTRONIC AIDS (Tewkes) Ltd
Dept YC, 62 High Street,
Evesham, Worcs. WR11 4HG
Telephone: 0386 49339

ATLANTIS
S·O·F·T·W·A·R·E L·T·D

DON'T RISK IT!

If you can write high quality arcade games for **Amstrad, Atari, Commodore, Electron, MSX** or **Spectrum** computers, we would like to talk to you.
Contact Mike Cole at **Atlantis Software.**

THERE ARE SAFER WAYS OF EARNING MONEY.



28 STATION ROAD LONDON SE25 5AG

COMPUTER REPAIRS

Fast & expert repair service by an established Company
All prices inc. parts, carr. VAT & 3 months warranty

Spectrum	£18.95
Interface 1/2	£19.95
Microdrive	£16.95
ZX81	£14.95
Spectrum Plus	£18.95
Spectrum 48K upgrade	£29.95
Spectrum 16K Ram pack	£9.95
Q.L.	£34.95
Commodore 64	£19.95 + parts
Commodore 16	£29.95
Commodore VIC20	£17.25 + parts
Commodore C2N Cassette	£14.95
also	
BBC-B	£21.95 + parts
Electron	£19.95 + parts
Amstrad C464 (Keyboard only)	£34.95
Dragon 32	£34.95
ANY COMPUTER	Ring for prices

In exceptional cases we reserve the right to vary these prices
To obtain these prices, please enclose advert.

ARC Electronics
54 Heron Drive, Wakefield, W. Yorks
Tel: (0924) 253145

ALADDINK

RIBBON RE-INKING PRICES

Printer	Price
AMSTRAD DMP2000	£2.00
AMSTRAD PCW8256	£1.90
BROTHER M1009	£1.35
CANON 1080	£1.80
COMMODORE 4023	£1.75
EPSON FX80	£1.50
EPSON LX80	£1.30
KAGA TAXAN KP810	£1.80
SEIKOSHA GP50S	£2.05
SHINWA 4023	£1.75
SILVER REED EX44	£1.95
SMITH CORONA D200	£2.15

If you used fabric printer ribbon is not on this list, end it with one third of normal retail price.

ALADDINK,
(Dept YC), 4 Hurkur Crescent,
Eyemouth, Berwickshire, TD14 5AP
Tel: (0390) 50965

AB Computers & Electronics

(Authorised NEC dealers)

Come to us for your software and hardware . . .

Atari, Amstrad, BBC, Commodore (inc. the new Amiga)

IBM/NEC PCs and compatibles, printers, Winchester disc drives, modems, discs, paper . . . in fact any accessory you may ever need!

★ Low cost repairs (from £12) for BBCs, Commodores, Amstrads etc.
★ Collection/delivery optional

We are next to Osterley Park on the A4, 2 mins from the tube (Osterley Station).

173 Thornbury Road, Osterley, Isleworth, Middlesex TW7 4QG
Phone 01-568 7149 or telex 946240
'Easy to' – 192008215

SINCLAIR COMPUTERS REPAIRED BY EXPERTS

ZX81 & ZX PRINTER	£15.50
SPECTRUM 16K, 48K, & 128K	£19.50
INTERFACE 1, 2 & MICRODRIVE	£17.50
16K TO 48K RAM UPGRADE	£25.00

ALL PRICES ARE FULLY INCLUSIVE, Computers are returned by 1st class registered C.O.D. Post

SUPER FAST SERVICE, PHONE FOR FULL DETAILS

(24 HR GUARANTEED TURNROUND OR 25% DEDUCTED FROM BILL)

SEND COMPUTER ONLY. WITH DESCRIPTION OF FAULT TO:

GJS COMPUTER SERVICES
FREEPOST
MANCHESTER M11 2FA
TEL: 061-223 7531

WE ALSO REPAIR AMSTRAD, COMMODORE, LYNX, ORIC, & QL COMPUTERS
PHONE FOR DETAILS

PROGRAM LISTINGS

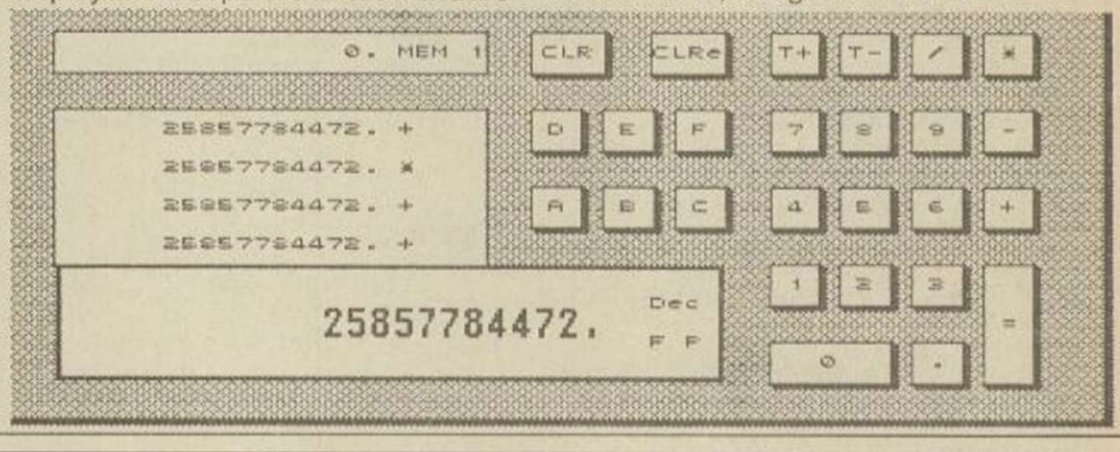
NUMBERS UP

◆ *Amstrad* ● *R. Bhattacharya*

Numbers Up is a fast-moving strategy game played against the clock. Twenty overturned counters are shown and, using the cursor keys or a joystick, you must find them in a set sequence. To turn over a counter, position the arrows around it and press fire or copy. If you choose the wrong counter, it is turned over automatically and you move to another.

If your choice is correct, the number is displayed in a separate window and the counter disappears from the playing area. It is important to try to remember the positions of any counters you find in the incorrect sequence so that, when they are needed, they can be found more quickly.

The position of the counters, however, is changed each time the game is played. During the game, a clock shows the elapsed time. If you fail to find all the counters in the correct sequence within one minute, the game will end.




```
100 DIM hu(20):cl=0:ro=1:co=1:pb=77:pc=150:
gn=1:ti=0:de=9
110 GOSUB 1080
120 MODE 0:PAPER 10:CLS
130 FOR x=1 TO 20:hu(x)=x:NEXT
140 FOR y=1 TO 5:FOR x=1 TO 4
150 g=INT(RND(1)*20)+1:IF hu(g)=0 THEN GOTO
 150
160 nu(y,x)=hu(g):hu(g)=0
170 NEXT:NEXT
180 CLS:PEN 2:FOR x=2 TO 12:LOCATE 4,x:PRIN
T "NUMBER'S  UP":NEXT
190 FOR x=15 TO 24:LOCATE 4,x:PRINT "NUMBER
'S  UP":NEXT
200 GOTO 240
240 GOSUB 630
260 CLS #1:PRINT #1,"            Find the num
ber 'gn;
270 LOCATE 13+co*4,2+ro*4:PEN 2:PRINT CHR$(
240):LOCATE 13+co*4,-2+ro*4:PRINT CHR$(241)
280 IF (INKEY(0)=0 OR JOY(0)=1) AND ro>1 TH
EN LOCATE 13+co*4,2+ro*4:PRINT " ":LOCATE 1
3+co*4,-2+ro*4:PRINT " ":ro=ro-1
290 IF (INKEY(2)=0 OR JOY(0)=2) AND ro<4 TH
EN LOCATE 13+co*4,2+ro*4:PRINT " ":LOCATE 1
3+co*4,-2+ro*4:PRINT " ":ro=ro+1
300 IF (INKEY(8)=0 OR JOY(0)=4) AND co>1 TH
EN LOCATE 13+co*4,2+ro*4:PRINT " ":LOCATE 1
3+co*4,-2+ro*4:PRINT " ":co=co-1
310 IF (INKEY(1)=0 OR JOY(0)=8) AND co<5 TH
EN LOCATE 13+co*4,2+ro*4:PRINT " ":LOCATE 1
3+co*4,-2+ro*4:PRINT " ":co=co+1
320 IF INKEY(9)=0 OR JOY(0)=16 THEN GOTO 36
0
330 :i=ti+1:IF ti=de THEN GOSUB 830:ti=0
340 GOTO 270
360 IF nu(co,ro)=0 THEN GOTO 340
370 PAPER 1:PEN 2:LOCATE 12+co*4,ro*4:PRINT
 RIGHT$(STR$(nu(co,ro)),2)
380 FOR t=1 TO 500:NEXT
390 IF nu(co,ro)=gn THEN GOSUB 420:PAPER 0:
gn=gn+1:IF gn=21 THEN 500 ELSE GOTO 260
400 LOCATE 12+co*4,ro*4:PRINT "  ":PAPER 0
410 GOTO 340
420 PRINT #2,GN;
430 FOR X=12 TO 1 STEP-1:SOUND 7,100*X,5,5:
NEXT
440 PAPER 0:LOCATE 12+co*4,-1+ro*4:PRINT "
 "
450 LOCATE 12+co*4,ro*4:PRINT "    "
460 LOCATE 12+co*4,1+ro*4:PRINT "    "
470 nu(co,ro)=0
480 RETURN
490 END
510 FOR X=1000 TO 1 STEP -5:SOUND 7,X,1,6:N
EXT
520 FOR x=2 TO 18:LOCATE 13,x:PRINT" Well D
one Clever Cloggs":NEXT x
530 PRINT #1,"  YOU'VE FOUND ALL THE NUMBER
S !!!!!"
540 FOR t=1 TO 5000:NEXT
550 RUN
570 FOR X=1 TO 1000 STEP 5:SOUND 7,X,1,6:NE
XT
580 FOR x=2 TO 18:LOCATE 14,x:PRINT" Out of
 time.Hard luck!":NEXT x
590 PRINT #1,"     NEVER MIND..TRY AGAIN ."
600 FOR t=1 TO 4000:NEXT
610 RUN
630 MODE 1:PAPER 0:CLS:INK 0,6:INK 1,12:INK
 2,20:INK 3,15:PEN 2
640 FOR x=90 TO 270
650 DEG
660 PLOT 120+100*COS(x),290+100*SIN(x),3
670 NEXT x
680 DRAWR 100,0:DRAWR 0,-90:DRAWR 360,0:DRA
WR 0,290:DRAWR -460,0
690 FOR x=1 TO 360
700 PLOT 120+90*COS(x),290+90*SIN(x)
710 NEXT x
720 PLOT 226,105:DRAWR 348,0:DRAWR 0,280:DR
AWR -348,0:DRAWR 0,-280
730 PEN 1
740 FOR x=1 TO 4
750 LOCATE 16,-1+x*4:FOR y=1 TO 5:PRINT CHR
$(248)CHR$(247)CHR$(249)CHR$(32);:NEXT
760 LOCATE 16,x*4:FOR y=1 TO 5:PRINT CHR$(2
47)CHR$(247)CHR$(247)CHR$(32);:NEXT
770 LOCATE 16,1+x*4:FOR y=1 TO 5:PRINT CHR$
(250)CHR$(247)CHR$(251)CHR$(32);:NEXT
780 NEXT
790 LOCATE 8,3:PRINT "0":LOCATE 12,7:PRINT
"15":LOCATE 7,12:PRINT "30":LOCATE 3,7:PRIN
T "45"
800 WINDOW #1,2,39,24,24:PAPER #1,1:PEN #1,
2:CLS #1
810 WINDOW #2,2,39,21,22:PAPER #2,3:PEN #2,
0:CLS #2
820 RETURN
840 PLOT 120,295,2
850 DRAWR SIN(cl)*60,COS(cl)*60,0
860 cl=cl+6
870 PLOT 120,295,2
880 DRAWR SIN(cl)*60,COS(cl)*60,2
890 PEN 2:PRINT CHR$(22)CHR$(1);:LOCATE 8,7
:PRINT CHR$(231)CHR$(22)CHR$(0)
900 SOUND 1,730-cl*2,5,5
910 IF cl=360 THEN GOTO 560
920 RETURN
1070 RETURN
1090 SYMBOL AFTER 247
1100 SYMBOL 247,255,255,255,255,255,255,255
,255
1110 SYMBOL 248,3,15,31,63,127,127,255,255
1120 SYMBOL 249,192,240,248,252,254,254,255
,255
1130 SYMBOL 250,255,255,127,127,63,31,15,3
1140 SYMBOL 251,255,255,254,254,252,248,240
,192
1150 RETURN
```

SUPERTEC ATARI USER OFFERS

NEW JUST ARRIVED!
CUMANA DOUBLE DENSITY DRIVES FOR ST
Telephone for details

COMPLETE SYSTEMS!
Huge Range to choose from call for details and prices

ATARI 8 BIT ALSO SUPPORTED! 850 INTERFACE IN STOCK!

SOFTWARE PUNCH

ATARINET (order Ref 02) Minimum three stations £160.00 +VAT per station

BOFFIN Word Processor with graphics (order Ref 03) £99.00 +VAT

MODEMS
by Miracle Technology

WS2000 (Order Ref 06) £108.70 +VAT

WS 4000 Auto-dial/ Auto-answer. (Order Ref 07) £130.39 +VAT

LARGE RANGE OF ST SOFTWARE
Including:
KUMA - HABA - ATARI
SOFTWARE PUNCH
BATTERIES INCLUDED
PHILON - CASHLINK
Call for details and prices

POST YOUR ORDER OR CALL TONY DWYER ON 0268 282308

ALL PRICES INCLUDE P&P

DISCS

5¼" (Pack of 10) (Order Ref 04) £7.50

3½" (Order Ref 05) £2.50 EACH

PERSONAL SHOPPERS WELCOME
MON-FRI
9am — 5pm

BULLETIN BOARD
0268 293639
(24 HOURS)
300 BAUD

SUPERTEC LTD.
CORNWALLIS HOUSE,
HOWARD CHASE,
BASILDON, ESSEX, SS14 3BB Tel: 0268 282308

Please send me the items marked. I enclose Cheque/Postal order for the full amount, including VAT £.....

OR Debit my Access Card Number:.....

YC/9

Ref	Qty	Price (ea) Incl VAT
01		£1026.71
02		£184.00 (per station)
03		£113.85
04		£7.50 (Pkt 10)
05		£2.50
06		£125.00
07		£149.95

Name _____

Address _____

_____

_____ Postcode: _____

Signature: _____

PLEASE ALLOW 28 DAYS FOR DELIVERY

RSD Connections Ltd

MONITOR LEADS

FIDELITY (Scart to: BBC/ QL/COMMODORE/SONY/ SPECTRUM 128/AMSTRAD	£4.95
MICROVITEC to BBC/QL	
SPECTRUM 128/AMSTRAD	£2.50
FERGUSON to: BBC/COMM 64/ MSX/QL/SPECTRUM 128/ AMSTRAD	£2.50
HITACHI to: BBC/COMM 64/QL/ SPECTRUM 128/AMSTRAD	£2.50
SONY/KAGA to BBC	£5.95
Green Screen to: Comm 64/BBC	£2.95
Green Screen to: QL	£1.50
Green Screen to: COMM 128	£4.95
Phono to Phono	£1.25
PHILIPS to: BBC/COMM 64	£2.95

IDC AMPHENOL

36-way plug	£4.95
36-way socket	£5.95
36-way plug (solder type)	£4.95

B.B.C. DISK DRIVE LEADS

Dual disk drive power lead	£4.50
Dual disk drive lead 1m	£10.25
Single disk drive power lead	£2.75
Single disk drive lead 1m	£7.25
Disk drive extn lead 1m	£7.25
COMMODORE Serial Lead	£2.75

CASSETTE LEADS

BBC to cassette	£2.25
Dragon to cassette	£2.20
Spectrum to cassette	£1.25
BBC to Acorn cassette	£2.25
MSX to Cassette	£2.50

PRINTER LEADS

ALL 1 METRE LENGTH

BBC	£9.95
BBC serial	£8.95
SPECTRUM 128	£10.75
MEMOTECH	£12.75
EINSTEIN	£12.75
IBM PC	£15.75
SPECTRUM interface one to RS 232	£9.75
ATARI 520/1040	£15.25
MSX	£13.95
APRICOT	£15.20
DRAGON	£9.95
QL	£10.75

ANY COMBINATION OR LENGTH OF LEADS MADE TO ORDER

RIBBON CABLE price per ft

	Grey	Rainbow
9-way	£0.13	£0.24
10-way	£0.15	£0.28
14-way	£0.18	£0.32
15-way	£0.20	£0.36
16-way	£0.22	£0.40
20-way	£0.30	£0.50
24-way	£0.38	£0.60
25-way	£0.40	£0.65
26-way	£0.45	£0.70
34-way	£0.60	£0.80
37-way	£0.65	£0.85
50-way	£0.70	£0.90
50-way	£0.95	£1.25
60-way	£1.10	£1.40
64-way	£1.25	£1.50

EDGE CONNECTORS

2 x 23-way (ZX81)	£1.85
2 x 28-way (Spectrum)	£2.10
DOUBLE SIDED PLUG BOARD	
ZX-81 23-way	£1.25
Spectrum 28-way	£1.50
ADDITIONAL IDC 56-way Card Edge for Extension Lead	£4.25

D CONNECTORS

Solder	Bucket	Male	Female
9-way		£0.75	£1.00
15-way		£0.85	£1.50
25-way		£1.50	£1.90
37-way		£2.40	£3.25
HOODS	£0.95		

TELEPHONE CONNS

Surface master jack socket	£3.75
Surface extn socket	£2.50
Dual outlet adaptor	£4.25
Line jack cord 3mtr	£1.85
4 core cable per metre	£0.15
BT Plug	£0.48

CONNECTORS IDC

	Card Edge	Trans PCB	2 Row Socket
10-way	£1.20	£0.95	£0.80
14-way	–	–	£0.90
16-way	£1.60	£1.20	£1.00
20-way	£1.90	£1.35	£1.20
26-way	£2.40	£1.60	£1.45
34-way	£3.10	£1.95	£1.80
40-way	£3.40	£2.00	£1.85
50-way	£3.85	£2.25	£2.00
60-way	£4.80	£2.60	£2.25

SPECTRUM EX LEADS

6 inch extensions cable M to F	£10.50
6 inch F to 2M's	£14.75
12 inch extension cable M to F	£10.75

AMSTRAD EXPANSION PORT EXTENSION LEADS

NEW!

6" Single F to m	£10.50
Double F to 2M's	£14.75

Suitable for 664 & 6128

The easy way to connect your add-on's

AMSTRAD MONITOR EXTENSION LEADS

To 464, 1m	£8.50
To 664 & 6128	£7.50

AMSTRAD PRINTER LEADS

1 metre	£10.75
2 metres	£12.50

AMSTRAD DISK DRIVE LEAD

Suitable 664 & 6128. 1m £8.95

AMSTRAD

1m Printer Extn lead	£9.50
PCW Interface to Printer (1.5m lead)	£15.20

MISCELLANEOUS

TV Aerial Leads 1.2m	£1.25
2m	£1.50
3m	£1.75
4m	£2.00
'Y' piece Switched TV Splitter. TV & Aerial leads plugged in without loss of signal	£1.95
Spectrum Power Supply replacement lead	£2.50

IDC D CONNECTORS

	Male	Female
9-way	£2.70	£3.20
15-way	£3.20	£3.70
25-way	£3.80	£4.45
37-way	£5.90	£6.80

Please enclose SAE with all enquiries for FREE advice.

TRADE ENQUIRIES WELCOME

75p P&P IN UK Access & Visa accepted Add 15% VAT to all orders

Cheques made payable to

RSD Connections Ltd, Dept YC9, PO Box 1, Ware, Herts. Tel: 0920 5285

CUT PRICE SOFTWARE

SPECTRUM	RRP	OUR PRICE
Elite	14.95	10.00
Ghost & Goblins	7.95	5.60
Sam Fox	7.95	5.50
Exulnox	9.95	7.25
Cave Adventure	7.95	5.50
Mantronix	7.95	5.50
Paperboy	7.95	5.50
Biggles	9.95	7.25
"V"	7.95	5.50
Spitting Images	7.95	5.50
Rock & Wrestle	6.95	6.50
Starstrike 2	7.95	5.50
Pentagram	9.95	7.25
Movie	7.95	5.50
Spitfire 40	9.95	7.25
Sabatour	8.95	6.50
Turbo Esprit	8.95	6.50
Titanic	9.95	7.25
Heavy on Magick	9.95	7.25
Price of Magick	9.95	7.25
World Cup Carnival	9.95	7.45
Bouncers	9.95	7.25
Nexus	9.95	7.25
Batman	7.95	5.50
Quazatron	9.95	6.50
Rebel Planet	9.95	7.25
Shadowfire 2	9.95	7.25
Red Hawk	9.95	6.50
Spin Dizzy	9.95	7.25
Pyracurse	9.95	6.50
Kung Fu Master	9.95	7.25
COMMODORE 64		
Elite	14.95	10.00
Bomb Jack	9.95	7.25
Tubeular Bells	7.95	6.50
Ghost & Goblins	9.94	7.25
Yie Ar Kung Fu	9.95	6.50
Green Beret	9.95	6.50
Hardball	9.95	7.25
Cauldron 2	8.95	5.50
Crusade Europe	14.95	11.95
Sam Fox	8.95	6.50
Tau Ceti	9.95	7.25
Shogun	9.95	7.25
Bouncers	9.95	7.25
Empire	9.95	7.25
Popeye	7.95	5.50
Titanic	9.95	7.25
Silent Service	9.95	7.25
Freeze Frame	39.95	35.95
Silent Service (D)	14.95	10.95
Nexus	9.95	7.25
Price of Magick	9.95	7.25
Sabateur	8.95	6.50
Fairlight	9.95	7.25
Heavy on Magick	9.95	7.25
Way Of The Tiger	9.95	7.25
AMSTRAD		
Kung Fu Master	9.95	7.25
Way Of The Tiger	9.95	7.25
Elite	14.95	10.00
Elite (D)	17.95	13.95
Spin Dizzy	9.95	7.25
Kung Fu Master (D)	14.95	10.95
Shogun	9.95	7.25
Shogun (D)	14.95	10.95
Mini Office 2	16.95	12.95
Mini Office 2 (D)	19.95	14.95
Sorcery + (D)	13.95	10.95
Graham Gooch Cr	9.95	7.25
Tau Ceti	9.95	7.25
Tau Ceti (D)	14.95	11.00
Spitfire 40	9.95	7.25
Spitfire 40 (D)	13.95	10.95
Graham Gooch (D)	14.95	10.95
Green Beret	8.95	6.50
Ivvosat (C)	29.95	5.95
Transact (C)	29.95	5.95
Skyfox	9.95	7.45
Gunfright	9.95	7.25
Movie	8.95	6.50
Lord Of The Rings	15.95	11.00
Winter Games	9.95	7.25
Green Beret (D)	13.95	10.00
Sam Fox Strip	8.95	6.50
Sam Fox Strip (D)	13.95	10.00
Sold A Million 2	9.95	7.25
Sold A Million 2 (D)	14.95	11.00
ATARI		
Decathlon	10.99	8.99
Mercenary	9.95	7.25
The Pawn (ST)	24.99	19.99
Spy V Spy	9.95	7.25
Borrow Time (ST)	24.99	19.99
Music Studio (ST)	34.95	29.95
Goonies	9.95	7.25
Nightriders	6.95	5.50
Ballblazer	9.99	7.45
Beta Lyrae	9.95	7.25
Knock Out	8.95	6.50
Price Of Magick	9.95	7.25
BBC		
Yie Ar Kung Fu	9.95	7.25
Exploding Fist	9.95	7.25
Southern Belle	7.95	5.50
Mini Office 2	14.95	11.00
Mini Office 2 (D)	16.95	13.95
Strike Force	9.95	7.25
Commando	9.95	7.25
Match Day	9.95	7.25
Repton 2	9.95	7.25
Speech	9.95	7.25

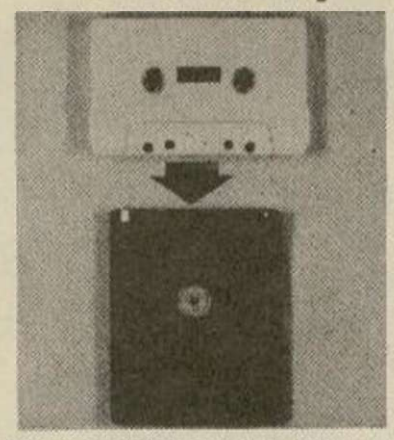
FULL RANGE OF MASTERTRONICS ★ FIREBIRD ★ BUG BYTE ★ AMERCAINA BUDGET RANGES AVAILABLE

THRUST FREE WITH EVERY C64 ORDER OVER £20.
NINJA MASTER FREE WITH EVERY SPECTRUM ORDER OVER £20.

Large Range Amstrad Disk Software Available. Amstrad blank disks £39.95 per 10. Overseas Orders Please Add 75p Per Tape. Mail order only. Access/Visa Orders Welcome. Please make cheques payable to C.P.S.

CUT PRICE SOFTWARE (YC), Stort House, Riverway, Harlow, Essex, CM20 2DW.
Telephone: (0279) 24433 (24hr Ansaphone)

* Discovery *



Transfer the majority of your software to disc. This intelligent program alters Basic loaders and **now transfers some Turboloaders.** When comparing Discovery with a similar program, AMTIX! said: "I found Discovery just a bit easier to use".

464, 664 and 6128.

Tape £7.99. Disc £11.99. ROM £19.99.

"Discovery does its best over the widest range of games" ... "if you have a disc drive and some tape based software then I strongly recommend Discovery" – Amstrad Action Feb '86.

SIREN SOFTWARE

The Amstrad Specialists

Siren Software, Dept. CWTA.
76 Bridge Street,
Manchester M3 2RJ.
Telephone: 061-796 6874

Overseas Please Add £1.50 P&P
Also available from Shekana Computer Services

MASTER DISC

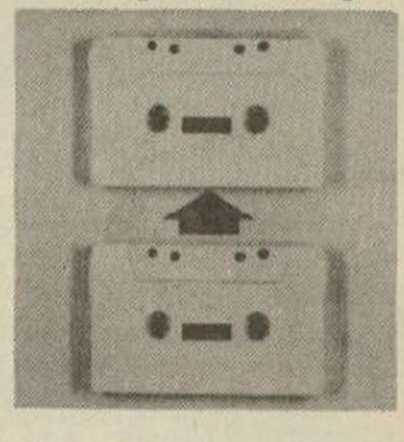
DISC UTILITIES

Now available on one disc a complete suite of disc utilities. Disc Duplicator, Directory Editor, Sector Editor, ZIP Disc, Basic Deprotector, Disc Map, File Transfer from Disc to Disc or Disc to Tape, Disc Header Reader, Double Speed Formatter, Memory Editor, Tape Header Reader

This Disc is the one you need!!

Only £12.99 on Disc 464, 664 and 6128

*Tape Utility *



Tape utility now handles normal, headerless and some Turboloaders. Choice of 10 loading speeds up to 4000 baud. Many many more features. "This program is the best" Amclub Extra. CPC464 ONLY **£6.99**

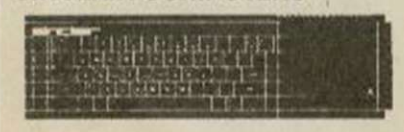
DISKON

Diskon – put your headerless programs on disc. We are the first to let you **put headerless programs on disc.** A suite of RSX's lets you manipulate your programs and put them on disc. This is not an automatic program and is suited only to those who have a small knowledge of AMSDOS. 464, 664 and 6128. **Disc £13.99**

ATARI COMPUTERS

The 1040STF 520STM and 520STM+ come with tos and gem in rom and logo, basic, neochrome, firstword, db master one, doodle and megaroids. 1040STF with disc drive, mouse and monitor:- monochrome £836 (£839) £316, colour £1046 (£1046) £1156. Atari 520 STM Computer (512K version) £360 (£336) £376. Atari 520STM+ (1 Megabyte version) £435 (£416) £456. Limited period special offers:- Atari 520STM with 500K disc drive Please write for price; Atari 520STM+ with 500K disc drive Please write for price. 1 megabyte upgrade for the Atari 520STM £99 (£99) £109. Cumana economy 1000K disc drives for the 520STM:- single £148 (£148) £170, dual £239 (£239) £271. Atari 500K ST disc drive £130 (£132) £152. Atari 1000K ST disc drive £173 (£172) £192. Atari ST monochrome monitor £136 (£146) £194. Economy Fidelity ST colour monitor £199 (£204) £264. Atari 14" medium resolution ST colour monitor £354 (£349) £399. 20 Megabyte ST hard disc £730 (£699) £769. Atari 130XE computer + game £116 (£121) £141. 130XE computer + cassette recorder + software £148 (£147) £172. 130XE computer + disc drive + software £234 (£233) £263. 130 XE computer + disc drive + 1027 printer + software £307 (£309) £369. Atari 1027 £116 (£122) £148. Atari 1050 £116 (£122) £148.

SINCLAIR COMPUTERS



Sinclair Spectrum 128 £136 (£138) £158. Sinclair QL Computer £194 (£196) £229. QL Floppy disc interface (See Cumana disc section below for suitable disc drives) £86 (£84) £94. Sinclair Spectrum Plus Computer 48K £96 (£99) £119. Spectrum Plus Computer + cassette + 4 games + joystick with interface £129 (£129) £159. Blank microdrive cartridges £2.50 (£3) £4. Spectrum floppy disc interface (See Cumana disc section for suitable disc drives) £107 (£99) £109. Spectrum Centronics printer interface £46 (£42) £47.

COMMODORE COMPUTERS

Commodore 128 £250 (£249) £279. New Commodore 128 compendium pack £279 (£275) £310. Commodore 128D £466 (£460) £510. 1571 Disc drive £257 (£250) £270. Commodore 64 + recorder + musicmaker keyboard + software £191 (£195) £235. Convertor to allow most ordinary mono cassette recorders to be used with the Commodore 128 and the Commodore 64 £9.78 (£9) £11. Centronics printer interface for Commodore 128 and the Commodore 64 £30 (£30) £35. MPS803 Printer £138 (£145) £175.

AMSTRAD COMPUTERS

New Amstrad PCW8512 £564 (£575) £675. Amstrad PCW8256 £449 (£450) £550. Amstrad 464 Colour £297 (£322) £402. Amstrad 464 Green £197 (£230) £310. Amstrad 6128 Colour £397 (£420) £500. Amstrad 6128 Green £297 (£322) £402. Amstrad DMP2000 printer £156 (£159) £191. Extra disc drive for Amstrad 6128 £99 (£103) £133.

CUMANA DISC DRIVES

To suit disc interfaces of Sinclair QL, Spectrum Enterprise and BBC B. 80 track double sided, cased and with power supply:- single 3.5" £134 (£134) £156, dual 3.5" £224 (£224) £256, single 5.25" £172 (£172) £201, dual 5.25" £310 (£310) £350.

PRINTERS

New Epson LX80 £249 (£249) £282. Tractor for LX80 £20 (£20) £30. Brother HR5 £111 (£113) £133. Brother M1109 £220 (£220) £260. Shinwa CTI CPA80+ £193 (£192) £228. Cannon PW1080A £309 (£306) £356. Microperipherals MP165 £223 (£223) £263. Brother EP44 £224 (£220) £240.

SWANLEY ELECTRONICS
The Computer Export Specialists
Dept. YC, 32 Goldsel Rd., Swanley, Kent BR8 8EZ, England
Tel: SWANLEY (0322) 64851

Official orders welcome. UK prices are shown first and include post and VAT. The second price in brackets is for export customers in Europe and includes insured airmail postage. The third price is for export customers outside Europe (including Australia etc) and includes insured airmail postage.

MAKE YOUR INTERESTS PAY!!

Train at home for one of these Career Opportunities

More than 8 million students throughout the world have found it worth their while! An ICS home-study course can help you get a better job, make more money and have more fun out of life! ICS has over 90 years experience in home-study courses and is the largest correspondence school in the world. You learn at your own pace, when and where you want under the guidance of expert 'personal' tutors. Find out how we can help YOU. Post or phone today for your **FREE INFORMATION PACK** on the course of your choice.

Introduction to Computer Programming	Programming in BASIC
Programming in COBOL	Electronics
Electrical Engineering	Electronic Engineering
Elec. Contracting/ Installation	Radio, Audio and TV Servicing
GCE over 40 'O' & 'A' level subjects	

Course of Interest .....

Name _____

Address _____

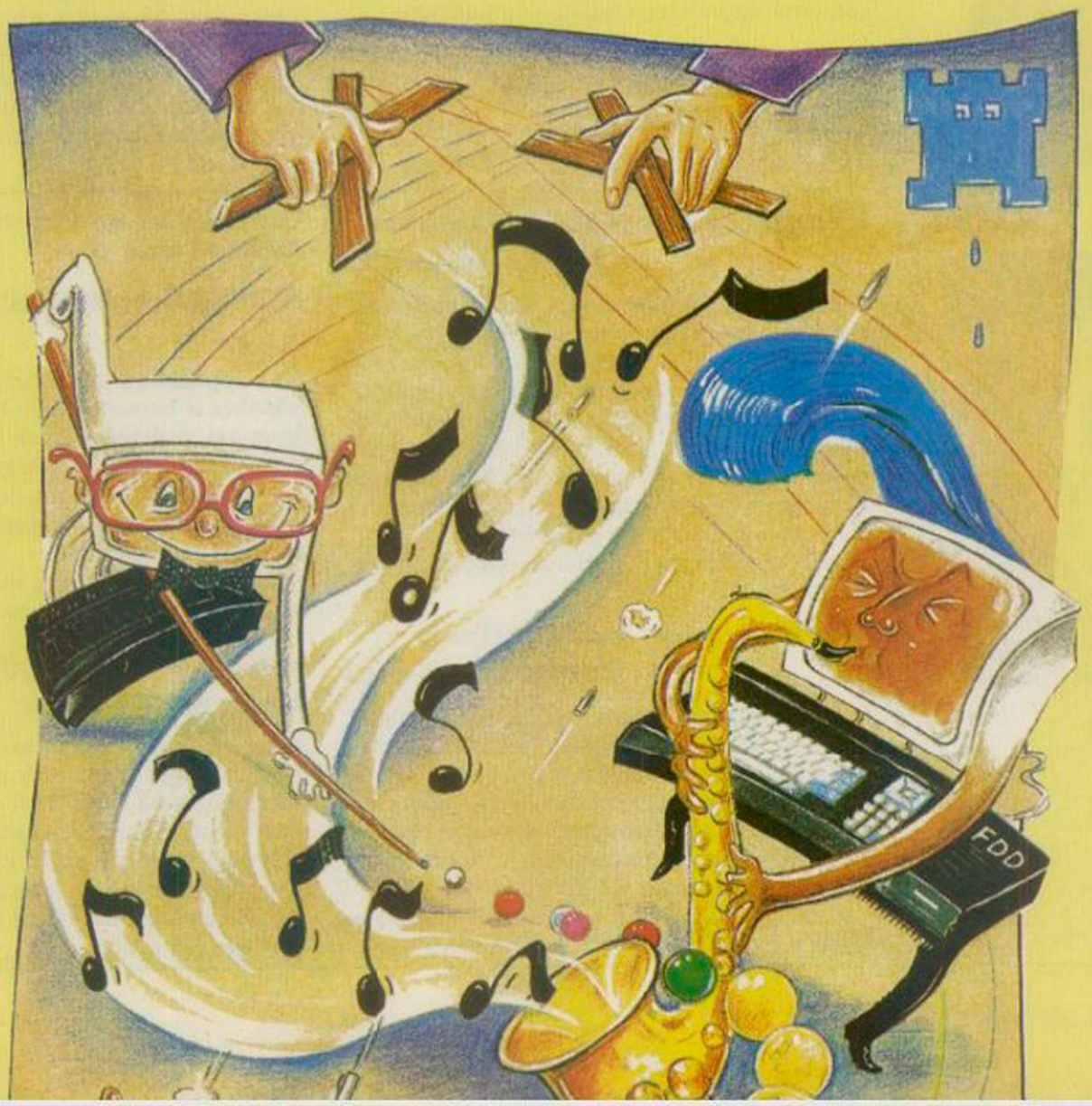
_____ P. Code _____

ICS International Correspondence Schools, Dept. ETS96
312/314 High St., Sutton, Surrey SM1 1PR.
Tel: 01-643 9568 or 041-221 2926 (24 hours)

Your COMPUTER COURSE

INDEX

The *Your Computer Course* is finished now but by no means forgotten. In six months we taught you about the basics of programming, languages, operating systems and the specifics of colour, music and games development on a number of popular machines. The only thing we have not taught you is how to use the course. That is what we now propose to do.



There are five major areas covered by the course in all its constituent parts:

Languages. Coverage of most of the major languages used on popular microcomputers, along with some of the popular implementations of those languages.

Glossary. A complete A to Z glossary of computing terms, written with style, panache and a good deal of humour by our resident wordsmith John Lettice.

Machine code. A start-to-finish beginners' guide to machine code on all the popular processors, including the Motorola 68000, the 6502 and the Z-80.

Sight and Sound. A tour round the music and graphics capabilities of most makes of home micros, with a guide to how they can be incorporated into entertainment software.

System Software. A look at operating systems and how they can be used to get control of the internal hardware of a machine to the greatest effect.

March, 1986

Tools of the programmers' trade Pages 2 and 3

Computer languages are really tools to help you do the job of operating your computer. In this article the Basic language, the most popular language among users of home computers, was introduced. Basic, though, is only one of a range of languages available to the microcomputer programmer. Prolog, Comal, Forth and Pascal are all available for the popular home computers and the pros and cons of each are discussed.

Musical pictures Page 8

Probably the most exciting programming task you can undertake with your micro is getting it to generate impressive music and pictures. *Musical pictures* describes a number of techniques for developing graphics software for use in programs and includes listings of three programs, one for the Spectrum and two for the Commodore 64.

Talk the language of your micro Pages 6 and 7

Computers are stupid; when you start to use machine code you will appreciate just how stupid they are. Mastering machine code programming will permit you to achieve graphics and music effects beyond the scope of interpreted languages such as Basic. *Talk the language of your micro* introduces the concepts of machine code programming with particular reference to the 8-bit Z-80 processor.

April, 1986

Orchestral manoeuvres Page 14

The Midi – Musical Instrument Digital Interface – is a standard convention for the connection of musical instruments to microcomputers. It is a serial interface which allows up to 16 instruments to be controlled by a single computer. The power of a computer when harnessed to the modern electronic instruments allows even the tyro musician to compose impressive musical compositions.

UMI-2BB interface Page 16

This is a short review of a Midi interface designed for use with the BBC micro. The review emphasises the ease with which a Midi interface coupled with appropriate software permits even the novice to compose impressive musical sounds.

To structure or not? – that is the question Page 16

One of the great debates among programmers centres on the need for structured programming, which divides the large number of jobs in any program into small, manageable portions. In this article, the pros and cons of the structured programming question are discussed.

May, 1986

Computer-generated graphics Pages 18 and 19

Computer graphics is one of the main growth areas of the home computer industry. Of all the applications which can be set for a micro, few are as immediately rewarding as the generation of on-screen pictures or graphics. Input devices such as lightpens, mice and graphics tablets have meant that anyone can produce graphics; no longer is programming excellence required. Even so, programming graphics directly requires a wide range of information; this shows you how.

Machine code sub-routines Pages 22 and 23

Programs of any size are usually made of smaller sections. When using Basic, they consist of PROCedures or GOSUBs, which allow individual sections to be controlled. Writing machine code is much more laborious than Basic, so even programs of only 1K require splitting into several sub-routines, the equivalent of PROCedures. Having written a series of sub-routines you will find that you build a library and the routines can be used again and again.

Amstrad sound generator Page 23

Any application can benefit from sound, whether it be subtle help beeps for a business program to massive earth-shattering bangs, zaps and crashes for a new game. Sound usually arrives last in programs, so if there is only a little memory remaining, machine code may be the only realistic answer. On the Amstrad, sound is achieved using the programmable sound generator. We show how.

Pascal – two popular implementations Page 24

Most programmers go through a quest for the perfect language for their particular purposes. Having moved from Basic, most will sample Forth and perhaps even Prolog. On the whole, however, there will probably be a prolonged, if not permanent, halt at Pascal, a high-level language which has much to offer the experienced programmer.

The constituent parts of the course form the basis for a solid grounding both in your ability to program and your access to the features specific to your machine and its processor. It is our hope that the course, in total, is thus a good deal more than the sum of its parts.

June, 1986

Commodore 64 graphics Pages 26 and 27

One of the keys to the successful writing of any computer game is the ability to move graphics objects round the screen with the greatest possible speed. In this feature the basics of graphics on the Commodore 64 are introduced, the starting-place being the humble print statement. The article then introduces the concept of user-definable graphics and how they can be used to make the creation of impressive graphics displays a task even the relative newcomer to programming can undertake safely.

First steps with 68xxx machine code Pages 30 and 31

Many are deterred from the idea of learning to use machine code because it takes a great deal of effort to do even the simplest things. The 68xxx series of microprocessors, as used in the QL and Atari ST, has an elegant instruction set which makes programming in machine code an easier task than on many 8-bit micros. *First steps with 68xxx machine code* introduces the basics of machine code programming with this series of MPUs and presents some useful information for the programmer.

Operating systems – a key role Page 32

Behind every good micro is an operating system which can usually take most of the credit for the functioning of the system. CP/M is the best-known of the 8-bit operating systems, being one of the first available for microcomputers when they became available in the late 1970s. This article explains the function of an operating system, with particular relevance to CP/M and to the way in which it operates with both the hardware of a system and the applications software used with a system.

July, 1986

Computer-animated design Pages 34 and 35

Programming good games programs depends mainly on the quality and smoothness of your animation. Using PRINT and CLS commands may achieve movement but it is jerky and slow. It is far better to use x and y co-ordinates to measure the movement accurately. To complete the rock-collecting game, these animation techniques will prove essential and will add to the overall quality of the game.

Beginners' guide to the 6502 Pages 38 and 39

In the last five years, the 6502 processor has proved to be one of the most successful and powerful processors available, with machines such as the BBC and 64 relying on it. One of the main reasons is that it is much easier to program than the Z-80. However easy programming the 6502 is, you will still need an assembler to make the most of the power of the processor. An assembler translates easily-understandable mnemonics into the numeric codes which the computer requires to create a source file.

Forced into submission Page 40

The CP/M submit utility allows users to prevent keying repetitive sequences of commands at the keyboard. Computers such as the Amstrad CPC and PCW range have a wide variety of CP/M commands no-one will ever use. SUBMIT really can be used practically.

August, 1986

Making the most of your computer Page 42

Given any programming problem to solve, programmers will have at their disposal a number of tools which will help them arrive at a solution to the set task. The best programmers are those who make effective use of the many programming aids available to them. *Making the most of your computer* outlines the way to more efficient programming.

Finding the language for your needs Page 44

Fortran is not a language associated normally with microcomputers, yet versions of it are available for machines as diverse as the BBC, the QL and Atari ST. The main reason for the large number of home micro editions of Fortran is that it remains a popular teaching language in schools and colleges. This article introduces the Fortran language, highlighting its features.

Mastermind on the BBC Page 45

Mastermind, the popular seventies strategy game, is used to illustrate a number of games programming techniques which can be incorporated into readers' programs. As a bonus, a full listing of the game for the BBC micro is given. While the program is written for the BBC computer, it is possible to convert it to run on other micros.

Multi-tasking Pages 46 and 47

If you look at the commercial games available you will notice that the action normally involves more than one object moving on the screen at any time. Not only that, but a tune may be playing in the background. The concept of doing more than one thing at any time is known as multi-tasking. The concepts of programming in a multi-tasking environment are introduced in this article, which includes a number of practical programming examples for popular computers.

Making use of the world's oldest medium Page 48

The final page of the final part of the course lists a number of books which will develop the skills developed during the six instalments of the *Your Computer Course*.

To guide you round the completed course, we suggest several ways of using it, depending on how much you already know about computers and how they work. If you consider yourself a complete novice, we suggest you read the course in the following order:

Musical pictures, Sight and Sound, p.7, March, 1986; Orchestral manouvres, Sight and Sound, pp.14-15, April, 1986. To structure or not, Programming, p.16, April, 1986. Computer-generated graphics, Graphics, pp.19-20, May, 1986. Commodore 64 graphics, Graphics, pp.26-27, June, 1986. Computer-animated design, Graphics, pp.34-35, July, 1986; Operating systems, Systems Software, p.32, June, 1986. Forced submission, System software, p.40, July, 1986. Making the most of your computer, p.42, August, 1986. Mastermind, Programming, p.45, August, 1986. World's oldest medium, Books, p.48, August, 1986.

If you already have a reasonably good grounding in Basic programming and have a primary understanding of how computers work, you can probably pass over those beginners' elements of the course and begin your reading from the next stage, which we suggest should be read in the following order:

Tools of the programmers' trade, Languages, p.3, March, 1986. The Forth language in action, Languages, pp.10-11, April, 1986. Pascal, Languages, p.24, May, 1986. Finding the language for your needs, Languages, p.44, August, 1986. Talk the language, Machine code, pp.6 and 7, March, 1986. Machine code sub-routines, Machine code, pp.22-23, May, 1986. First steps with 68xxx M/C, Machine code, pp.30-31, June, 1986. Beginners' guide to 6502, Machine code, pp.38-39, July, 1986. Multi-tasking, Machine code, pp.46-47, August, 1986.

The final area we covered in the course was John Lettice's A-Z Glossary of computing terms. It should be read and kept as a reference guide. It may be read in any particular order, since it is written in a friendly and entertaining fashion.

The big question, of course, is whether or not you passed the course. Only you can tell us that.

Complete the Your Computer Course

If you missed all or part of the *Your Computer Course*, the relevant back issues are available from Back Issues Department, 79-80 Petty France, London, SW1H 9ED. The cost is £1.50 for an individual issue or £9 for the complete set. Simply fill out the form below, indicating which issues you require.

Name _____

Address _____

_____

Postcode _____

Please tick which issues are required

- ☐ March
- ☐ April
- ☐ May
- ☐ June
- ☐ July
- ☐ August

I enclose a cheque/postal order for £ ☐

Send your completed form and payment to:
Back Issues Department, 79-80 Petty France, London SW1H 9ED.

WIN TWO GREMLIN GAMES OF YOUR CHOICE

PLUS A FABULOUS LIMITED EDITION JACK THE NIPPER TEESHIRT

PRESENTED IN CONJUNCTION WITH GREMLIN GRAPHICS

The latestGremlin game, *Jack The Nipper*, is riding high in the charts for both the Amstrad and Spectrum. To coincide with the launch of the game on the Commodore 64, and other new Gremlin releases, *Your Computer*, in conjunction with Gremlin, is offering 20 lucky winners a Jack The Nipper teeshirt and a choice of any two Gremlin games.

To win, all you need to do is answer three simple questions and send your answers to *Your Computer*, 79-80 Petty France, London SW1H 9ED. The winners will be the first 20 correct answers to be drawn from all those received by the closing date of the competition, September 30, 1986.

QUESTIONS

1. ***Name two well-known Gremlin platform games?***
2. ***Which famous arcade game conversion is Gremlin undertaking for U.S. Gold?***
3. ***Gremlin is working on a sequel to* Jack The Nipper. *In fewer than 10 words, what would you call the game?***

COMPETITION RULES

- ★ The winners of the competition will be the persons who send the first all-correct entries drawn from all those received before the closing date of the competition.
- ★ The names of the winners will be announced in the November issue of *Your Computer*.
- ★ All entries must arrive at the *Your Computer* offices by the last working day in September, 1986.
- ★ Each person may enter the competition only once.
- ★ Entries to the competition cannot be acknowledged.
- ★ No employees of Focus Investments nor their agents or close relatives may enter the competition.
- ★ The decision of the Editor in all respects of the competition will be final.
- ★ No correspondence with regard to any aspect of the competition will be entered into.
- ★ Focus Investments assumes no responsibility or liability for any complaints arising from this competition.

GREMLIN COMPETITION

Do not forget to enclose this coupon, or a photocopy of it, when you send your entry, marked Gremlin Competition, to the *Your Computer* editorial offices at the address shown at the front of the magazine.

Answers 1 ____ 2 ____ 3 ____

Name _____ **Age** _____

Address _____

_____

POSTCODE _____ **Day Tel. No** _____

SCHOOL SOFTWARE LTD.

Amstrad, BBC, Commodore
Amstrad PCW cassettes & discs
Music Invaders (Age 7-Adult)
Magic Maths (Age 4-8)
Maths Mania (Age 8-12)
Better Maths (Age 12-16)
*Better Spelling (Age 9-14)
*Better Spelling (Age 8-Adult)
*Physics 1 (Age 12-16) CSE/O' Level
*Biology 1 (Age 12-16) CSE/O' Level
*Chemistry 1 (Age 12-16) CSE/O' Level
Weather/Climate (Age 12-17)
Playschool Maths/Letters (Age 3-7)

Meadowvale Estate, Raheen, Limerick, Ireland.
Telephone: (061) 27994, (UK) 010-353- 61-27994.

MAIL ORDER

Read our excellent reviews in all the major magazines.

Cassettes **£9.95** each. Discs **£12.95** each.
48 hour MAIL ORDER
CPC464/664/6128/PCW 8256 (SOON)

** Available for PCW8256*

Advantage

OUR DISCS RUN ON ALL PCW AND CPC COMPUTERS

LIGHT ENTERTAINMENT £9.95 PER DISC (Members: £7.95)

CP/M GAMES COMPENDIUM. Includes the famous Colossal Cave Adventure with game-save feature, Chess Challenge, Othello, Golf Simulator, Biorhythm calculator, Mastermind, Life, Rubik's Cube, Noughts & Crosses, Battleship, Nim and Ping-Pong. Word-Search Puzzle Maker, Calendar Generator, Maze Designer & Banner Printers. Includes comprehensive on-disc documentation.

DIVERSIONS AND AMUSEMENTS. Include the classic Star-Trek, Space Trader, Lunar Lander, Hunt, Blackjack, Chase, Boggle, Baseball, Civil War, Craps, Bee Attack, Baccarat, Square and Quest (a text adventure); Calculator, Loan Estimator, Weather Forecaster, Horoscope, Home Budget, Investment Evaluator, Poster and Label printers. Includes comprehensive on-disc documentation.

We also offer a comprehensive range of useful utilities package – ask for details.

NATIONAL & INTERNATIONAL USER GROUP

Join the leading independent user group, supporting the Amstrad range of computers, and receive monthly Newsletters, user-support, the opportunity to share views, programs and ideas, plus £2 off each of the discs above. The membership fee is £8.95 per year (UK) or £13.95 (Overseas).

Advantage (Dept YC) 33 MALYNS CLOSE, CHINNOR, OXFORDSHIRE OX9 4EW

Disc upgrade scheme available. Some software is Public Domain which is supplied free of charge.

NOTE: ALL PRICES INCLUDE POST PACKING AND VAT AT 15%
*** OVERSEAS ORDERS, PLEASE ADD £1 PER DISC**

CUT-PRICE DISKS – LOWEST YET!

5.25" 'Universal'
suits all drives –
SSSD, SSDD, DSDD DSQD-96.
£49.99 – 100 disks
£26.99 – 50 disks
£14.99 – 25 disks
*Life-time No Quibble Warranty!
*Hub-rings, full spec.
*No Extras – vat & delivery included

Lowest 3M & branded prices – **Try us!**
Official orders very welcome.

FREE! Buy 200 disks and get a tub of screen/computer wipes.

3.5" HI-grade
Single or Double sided
SSDD or **DSDD** All ex-stock
£139.99 or **£159.99** – 100 disks
£ 75.99 or **£ 85.99** – 50 disks
£ 39.99 or **£ 49.99** – 25 disks
Same day despatch –

Cheques or orders to:-
Dept YCOMP
Direct Disk Supplies Ltd
FREEPOST
29 Dagmar Road
Kingston, Surrey, KT2 6BR.

VISA

DIAL-A-DISK
☎01-541 1144
Answering service for out of hours orders

Compumart

5¼" Disks FREE!!

5¼" Disks

Quality 5¼" Blank Disks	
10 Single Sided Double Density	£9.95 +£1p.p
10 Double Sided Double Density	£13.95 +£1p.p
50 Single Sided Double Density	£49.95 +£2p.p
50 Double Sided Double Density	£69.95 +£2p.p

Plastic library Case Free with ten Disks +2 FREE Disks
Perspex Storage Box Free with Fifty Disks + 10 FREE Disks
LIFETIME WARRANTY
Hub Rings, Envelopes, Labels etc

SAVE £££'s 2 FREE DISKS With every 10-5¼ DISKS
Buy 10 GET 12
50 GET 60

S·A·V·E Compumart £££

TOP Quality 3½" Microdisks
BOXED IN 10's - LABELS etc....

SINGLE SIDED 135 T.P.I.	DOUBLE SIDED 135 T.P.I.
£19.00 +£1p&p	£24.00 +£1p&p

10-AMSOFT 3" CF2 Microdisks
ONLY **£32.00** +£1p&p

Same Day Despatch On ALL Orders Before 4pm
ALL Prices Inc. VAT

24 Hour Credit Card Order Line
0509-233893
VISA Access

Please send cheques/postal orders to:
Compumart, (Dept YC)
Unit 8, Falcon Street, Loughborough, Leics, LE11 1EH

Compumart
0509-262259
HOTLINE

OFFICIAL SERVICE DEALERS

Immediate Delivery for all Amstrad Hardware, Software and Peripherals

We have full stocks at time of going to press.

Amstrad Stockists for Cumbria and North Lancs.

All goods despatched by return of post, no carriage charge.

C.A.V.E

Cumbria Audio Visual & Electrical
48 Cavendish Street,
Barrow-in-Furness,
Cumbria LA14 1PZ
Telephone: 0229 29109

AMSTRAD

CPC 6128 Green	P.O.A.
CPC 6128 Colour	P.O.A.
PCW 8256	£399 + VAT
PCW 8512	£499 + VAT
CF2 Floppy Disc	£3.75 + VAT
CF2 DD Floppy Disc	£5.00 + VAT

□

Prices include Postage & Packing.

□

CYCA LTD.

287 Caledonian Road,
London N1 1EG.

VISA **01-700 4004** AMERICAN EXPRESS

ROMANTIC ROBOT present

multiface one & two

ONE: £39.95 SPECTRUM 48K & 128 K (48K MODE ONLY)

MULTIFACE 1&2 must rank as the most useful multi-purpose interfaces for SPECTRUM or AMSTRAD machines. They enable you to stop ANY program at ANY point and SAVE it onto ANY media – disk, tape, cartridge, wafer.

They have a unique MULTI TOOLKIT to study/modify programs – you can PEEK/POKE every single byte in AMSTRAD/SPECTRUM incl. Z80 registers, customise programs, put in infinite lives, open a window and set/edit – with full on-screen editing – whole blocks of RAM in Decimal, Hex or even ASCII (to reveal any text in programs), etc.

Each MULTIFACE has an 8K ROM & 8K RAM, needs NO additional software, takes NO part of AMSTRAD/SPECTRUM RAM, is FULLY AUTOMATIC and 100% reliable – just instead of returning to program Save, Toolkit, Jump to an address 1) press the MULTIFACE button 2) select a function – Return to program Save, Copy to printer (Spectrum only) 3) input a name for saving, 4) select saving destination – Tape, Disk, etc. and choose to save Program or Screen only.

MULTIFACE 1 is the only product that can put literally anything onto anything – Tape, Microdrive, Multidrive, Discovery, Beta or Sempstan and sound !!! Both MULTIFACES are menu-driven with on-screen prompts and instructions, user-friendly, fully error-trapped idiot-proof. 1st class professional products with a full money-back guarantee.

MULTIFACE 1 also gives you a joystick interface (Kempston compatible) plus a switch to make it invirible whilst MULTIFACE 2 has a RESET button instead. Both have a through extension bus for connecting other peripherals. They use powerful & efficient compressing for fast re-loading and taking minimal room on disk, tape etc. – using MULTIFACE 2 for instance, 64 K programs usually load in approx. 20 seconds from disk and 5 minutes from tape (when saved at hyper speed). Programs saved with MULTIFACE ONE can RUN independently. Please note it using KEMPSTON disc interface on Spectrum.

FOR AMSTRAD 464, 664, 6128 £46.95 two

NO1 MULTIPURPOSE INTERFACES FOR AMSTRAD & SPECTRUM

TRANS-EXPRESS

The software way of transferring Spectrum software.
4 utilities for m'drive, 2 for wafadrive, 2 for Opus Discovery.
Invaluable for cartridge/disk maintenance & automatic transfers.
Highly professional, user-friendly, versatile and comprehensive.
'An ingenious piece of software.'
★★★★★ Features ★★★★★ Performance PCN

TOP SOFTWARE AT BOTTOM PRICE

Wriggler

'One of the best games for any machine I've seen for very long time.'
'Wriggler is a totally original game.' CRASH SMASH — STAR GAME PCN
'Great game, good music, well recommended.' — What Micro
'The graphics and sound are excellent and the game is totally addictive.'
10/10 value & playability. 9/10 graphics & sound. — C&V Games
'This is a great game.' CAS — 'Well worth buying.' — ZX C & Crash
'If you've any sense you'll order your copy now.' PCN — 'A WINNER' PCW

!NOW FOR AMSTRAD! SPECTRUM version at a BUDGET price

MUSIC TYPEWRITER

Complete Spectrum music system for writing, editing, playing, printing & storing music. Its real notation graphics and ease of use make it an ideal educational tool. Great fun to play with & a lot to offer in serious use (transposing, dot matrix printout etc).
'A very professional piece of programming, easy to use, excellent screen presentation, error trapping & helpful prompts. If you're interested in music and own a computer then get it.' ZX Computing

MIDI compatible with MIDI MUSICIAN package
Now going for a song at £5-95 only

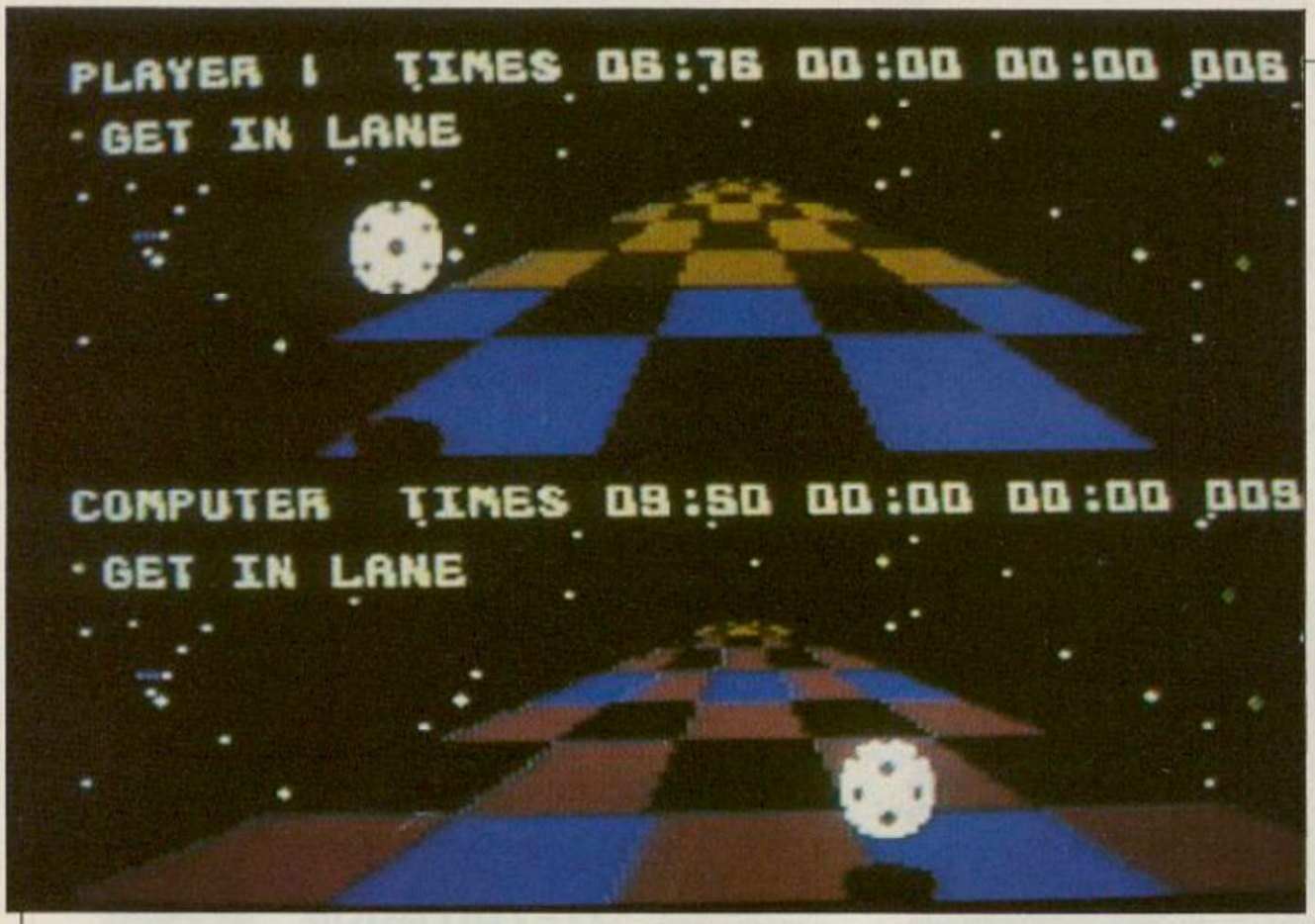
I enclose a cheque/PO for £..... (UK & EUROPE orders please add £1 overseas £2)
or debit my VISA No
Name..... Card expiry.....
Address.....

Please send MULTIFACE ONE £39.95 □ MULTIFACE TWO £46.95 □

TRANS-EXPRESS cartridge	£9.95 □	tape (for m'drive)	£ 7.95 □
disk (Opus Discovery)	£9.95 □	wafer (Rotronics)	£ 9.95 □
MUSIC TYPEWRITER	£5.95 □	with supplement	£ 7.95 □
WRIGGLER Spectrum tape	£2.95 □	or cartridge	£ 5.95 □
WRIGGLER Amstrad tape	£7.95 □	or disk version	£ 11.95 □

ROMANTIC ROBOT 77 Dyne Road London NW6 7DR 24 hrs VISA orders 01·625 9463 YC

Split screens on Commodore Trailblazer.



releases, *Way of the Tiger*, which is the biggest-ever seller, with sales approaching 100,000 units across all formats.

In the next six months, Gremlin intends to establish itself firmly as a producer of continuously excellent games. Its most recent, *Jack the Nipper*, is almost certain to start a new trend, with its cartoon-esque graphics and animation. As with many of its previous releases, it is the amusing scenario, not just the excellence of the programming, which produces such popular products.

Too difficult

However successful Gremlin has proved in the last two years, what must have be a surprise to it was the failure of *Bounder*. Stewart attributes that to one thing:

"It was too difficult. We know it was a good game but unfortunately it failed to capture public imagination," he says.

One thing certain is that it will not happen again. As well

Gremlin Graphics

Francis Jago looks at this successful company which has great plans for the future.

Sheffield, for some reason, seems to be a hot-bed of high-quality computer games. As well as some highly-talented individuals, the city has spawned one of the most consistently innovative of all software houses, Gremlin Graphics.

Started two years ago, Gremlin could scarcely have asked for a better start than Tony Crowther gave it with *Monty Mole*, which was both its first release and its first major hit. As time passed, managing director Ian Stewart decided that Gremlin had great potential and set up a full-time development team.

Originally it consisted of one programmer but, reflecting Gremlin's commitment, that has now enlarged considerably to 17, most of whom work and live in Sheffield. Recently Gremlin has really begun to expand and, with its range of products expanding rapidly, Stewart's ambition of achieving five percent market share seems a distinct possibility.

Although still primarily a games company, Gremlin recently has launched a range of utilities under a new label, Discovery. It will include products such as The Code Machine, a beginners' assembler/disassembler, and Animator, a excellent new animation package launched recently for the Amstrad. Also new on the Discovery label will be EMU, a promising electronic music package.

Popular products

One of the main reasons for the position of Gremlin at the top is the number of machines it supports. Not only will it try to release games on the 64, Amstrad and Spectrum but, if at all possible, it will convert them for the C16 and MSX.

Supporting the C16 has paid dividends and has firmly established the company as one of the top two C16 software houses. When one considers that more than 50,000 C16s were sold in the Christmas period of 1985 it is not a market to be sneezed at.

It is one of the most recent

Future Knight for the Commodore 64.

COMPANY PROFILE

as owning Gremlin, Stewart owns the only microcomputer shop in Sheffield and all his games are tested thoroughly by hundreds of eager schoolchildren before they reach the shelves.

Respected throughout the industry, Gremlin programmers recently won the contract to program *Gauntlet* for U.S. Gold. Although they have been working on this coin-op conversion for only two months, it promises to be one of the biggest licensed games ever and is due for release just before Christmas, which for Gremlin promises to be the most successful yet. As well as the continuing sales of Jack the Nipper, which will have been converted to the Commodore 64 by then, there are four spectacular new releases, all of which could reach number one, one of which must do so.

The first is *Footballer of the Year*. Released to coincide with the beginning of the new season, it promises to start where *Football Manager* left off. In the Gremlin game you take control of an individual footballer and the object is to be as successful as possible. Transfers, league championships, goal bonuses and many more features should make the game a strategist's delight.

For arcade fans, Gremlin has something for everyone. *Pen-tacle*, for the Commodore 64 and Atari, is a arcade/adventure which achieves everything for which Ultimate strived so unsuccessfully. Graphically superb, the game involves travelling round a maze, collecting four valuable candles and finally disposing of the evil demon.

Described by the programming team as a "the first ever blast-venture", Future Knight will be available at first only for the 64, with other versions following soon after. In keeping with Gremlin tradition, the player takes control of an incredibly cute character, this time called Randolph, and it is his task to rescue his beloved maiden from the clutches of Spegott the Terrible.

Using some of the best backgrounds yet seen on the Commodore, with a total of 20 levels, Future Knight will keep Gremlin at the forefront of platform game technology.

If one of the new releases shines more than any other it must be *Trailblazer*. Available initially for the 64, Spectrum and MSX, with an Amstrad version following soon after, it takes many of the excellent features of *Bounder*, combines them with true arcade addictiveness, and results in a game destined to be a classic.

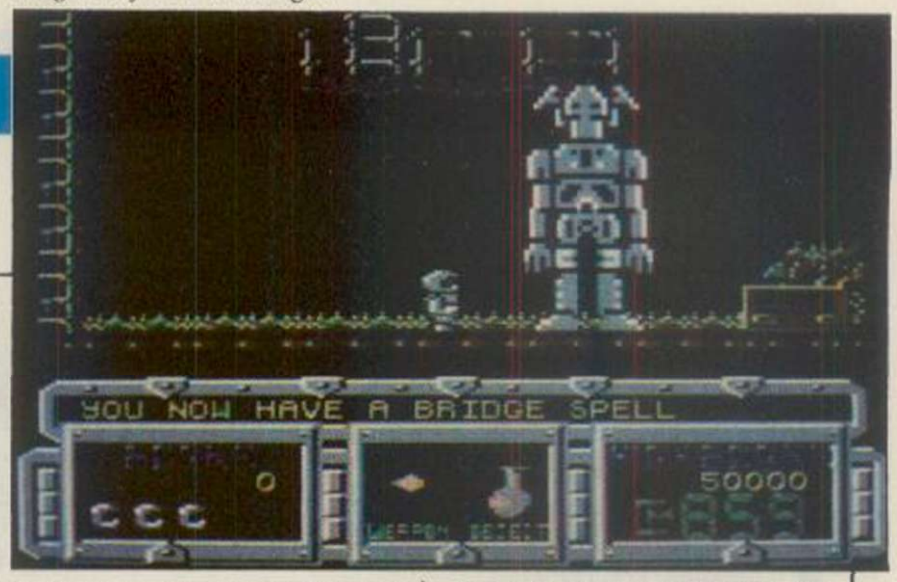
Controlling a football-shaped object as it flies into the unknown may sound easy but when you have to bounce, dodge holes, and scream left and right, Trailblazer tests reactions and stamina to the full.

One title a little further away, nearer 1987, is the follow-up to Way of the Tiger. Called *Avenger*, it takes a more adventurous path than its predecessor and should appeal to a wide variety of players.

Stewart, with his partner Kevin Norburn, has created a company of which to be very proud. In a market where companies seem to care too little for the individual, Gremlin games stand out, both in terms of quality and popularity. If the customer is always right, Gremlin is one of the top software houses in the U.K. and its success is deserved.

Finally, watch for *Monty Mole III*, coming soon to your micro.

Stage 2 of Future Knight.



Way of the Tiger II – Avenger.

Trailblazer on the Spectrum.

Your COMPUTER CLASSIFIED

01-222 9090

Contact: Paul Monaf

COPY DATES: SEPTEMBER ISSUE: 30th July; OCTOBER ISSUE: 29th August

ADVERTISEMENT RATES QUOTED BELOW ARE SUBJECT TO THE ADDITION OF 15% VAT.
CANCELLATIONS, THREE WEEKS PRIOR TO COPY DATE

Lineage: 60p per word
(Min 20 words)
Box No: £7.00 extra
Lineage advertisements are prepayable and the order form published in this section should be completed and returned with remittance.

Display — rates per scc (Min. 2scc)

One insertion	£10.00
Three insertions	£9.70
Six insertions	£9.50
Twelve insertions	£9.00

Display advertisers should preferably reserve space by phone.

Post to:
Your Computer,
Classified Department,
79-80 Petty France,
London SW1 9ED.

Britain's Biggest Selling Home Computer Magazine

ADVANCED RESEARCH TECHNOLOGY

FLOPPY DISCS 100% GUARANTEED ERROR FREE

Disks available only in multiples of 10

5.25″

	10+	100+
SS/DD	63p	60p
DS/DD	69p	65p

p&p £1.00 minimum
File for 50 Discs £9.95

3.5″

	10+	100+
SS	2.00	1.90
DS	2.20	2.10

FROM 60p

8″ ON APPLICATION
All prices ex 15% VAT

WE RESERVE THE RIGHT TO *LOWER* PRICES WITHOUT PRIOR NOTICE AND REFUND THE DIFFERENCE OR QUANTITY AT OUR PREFERENCE.

Please ask for our Price List for IBM® PC compatible systems & add-ons including a simple kit £499 complete

Send your order now to:

**ADVANCED RESEARCH TECHNOLOGY
UNIT 1
5 MILLBROOK IND. ESTATE
CROWBOROUGH
E. SUSSEX TN6 3DU**

Trade enquiries welcome on (08926) 65606

IBM® is a registered trade mark of International Business Machines Ltd.

24 HOUR COMPUTER REPAIRS and COMPUTER SPARES

HOW TO GET YOUR SPECTRUM REPAIRED FOR ONLY £19.95

SPECIAL OFFER!

Why not upgrade your ordinary Spectrum into the fantastic DK'Tronics typewriter keyboard for only **£31.50** including fitting, VAT and return post and packing.
Normal recommended retail price **£49.95** Replacement printed DK'Tronics key sets **£7.50** including post & packing.

SPECIAL OFFER!

Why not upgrade your 16K Spectrum to a 48K for as little as **£17.95** including VAT, post and packing. If you would like us to fit the kit for you, just send us **£19.95** which is a fully inclusive price to cover all costs including return postage.
Full fitting instructions supplied with every kit.
Issue 2 and 3 only.

16K to 48K UPGRADE KIT

SPARES FROM OUR D.I.Y. SECTION

WHY NOT PURCHASE THE SPARES FOR YOUR COMPUTERS FROM US. THE ONLY MAIL ORDER COMPANY SELLING SPECTRUM SPARES.
Same day despatch service on receipt of orders.
You can order by Access card or call at our Reception to collect.

TRADE REPAIRS most welcome

TEN ★ REPAIR SERVICE

- ★ While you wait service including computer spare parts over the counter.
- ★ All computers fully overhauled and fully tested before return.
- ★ Fully insured for the return journey.
- ★ Fixed low price of £19.95 including post, packing and VAT. (Not a between price of really up to £30.00 which some of our competitors are quoting).
- ★ Discounts for schools and colleges.
- ★ Five top games worth £33.00 for you to enjoy and play with every Spectrum repair.
- ★ We repair Commodore 64's, Vic 20's, Commodore 16's and Plus 4's.
- ★ The most up to date test equipment developed by us to fully test and find all faults within your computer.
- ★ Keyboard repairs, Spectrum rubber key boards only £8.95.
- ★ 3 month written guarantee on all repairs.

BEST SERVICE — BEST PRICES!

EXTENSION RIBBON

56 Way ribbon cable to extend your ports for your peripherals **£10.95** plus £1.50 p & p

KEYBOARD TEMPLATES **£5.50** plus £1.50 p & p

RUBBER MAT **£6.50** plus £1.50 p & p

TRADE ORDERS WELCOME

ARE YOU ANOTHER CUSTOMER - fed up waiting weeks for your estimate?

Need your computer repaired fast? Then send it now to the **Number One Repair Company in the U.K.**, or call in and see us at our new fully equipped 2,500 square foot workshop, with all the **latest test equipment available**. You are more than welcome.
We will repair your computer while you wait and help you with any of your technical problems. Commodore computers repaired for only **£35.00**. Please note we give you a 100% **low fixed price** of £19.95 which includes return post and packing, VAT, not a between price like some other Repair Companies offer. We don't **shock you** with repair bills £30.00 upwards. We don't just repair the fault and send your computer back, we give your computer a:-

FREE OVERHAUL WITH EVERY REPAIR WE DO:-

We correct **Colour, Sound, Keyboard, Check the loading and saving chip**, Put new feet on the base if required, Check for full memory, Check all sockets including ear/mike and **replace where needed**. All for **an inclusive price of £19.95 including VAT, all parts, insurance and post and packing. No hidden extras whatsoever**. We don't have to boast too much about our service as we have thousands of customers from all over the world highly delighted with our service. **A first class reputation for speed and accuracy**. Don't forget, we are only **twenty minutes** from Manchester City Centre so why not call in, have a coffee with us and see your computer being repaired.

NEW

SPECIAL OFFER!

Gun Shot II Rapid Fire Joystick and interface complete outfit. Normal recommended retail price £19.95. If purchased together. Special offer of only **£16.50** including p & p.
Joystick available as separate item **£10.95** plus interface available as separate item **£9.00** plus £1.50 p & p

REPLACEMENT POWER SUPPLY

ZX81 SPARES NOW IN STOCK

Spectrum replacement power transformer suitable for all makes of computer £9.95 plus £1.50 p & p

KEYBOARD MEMBRANES

Spectrum keyboard membranes **£5.50** plus £1.50 p & p
Spectrum Plus spare keyboard membranes **£12.90** plus £1.50 p & p
ZX 81 membranes **£5.00** plus £1.50 p & p

COMMODORE POWER SUPPLY

Commodore replacement power transformer **£29.00** plus £1.50 p & p

ORDER NOW!

VideoVault D.I.Y. CORNER

We regret we cannot show all the components available. Just give us a call and we can quote you over the phone, delivery by 1st class post.

SPECTRUM SPARES

Z80B CPU	3.00
4116 Rams	1.00
ZTX 650	0.60
ZTX 213	0.60
Power Supply Transformers	9.95
ULA 6C001	16.50
All prices plus £1.50 Post and Packing	
Rom	16.50
Keyboard membrane Spectrum	5.50
Keyboard membrane Spectrum Plus membrane	12.90
Metal Templates	5.50
Keyboard Mats	5.50
ZX81 membrane	5.00
Service Manual	£30.00

COMMODORE SPARES

6526 – C.I.A.	23.00
6510 – Processor	23.00
6581 – Sid Chip	23.00
906114 – House Keeper	23.00
901225 – Graphic Rom	23.00
901226 – Basic Rom	23.00
901227 – Kernal Rom	23.00
6569 – VIC	23.00
4164 Rams – Memory	3.00
Power Supply Transformers	29.00

All our prices include VAT, but please add £1.50 on each order to cover post, packing and handling charges.

VIDEOVAULT HEALTH WARNING!!!
Sending your computer to any other Repair Centre can seriously Damage its Health

FULLY REPAIRED AND TESTED ON MOST ADVANCED TEST EQUIPMENT IN EUROPE!

VideoVault Ltd.

MANCHESTER CITY CENTRE BRANCH NOW OPEN. CALL FOR DETAILS

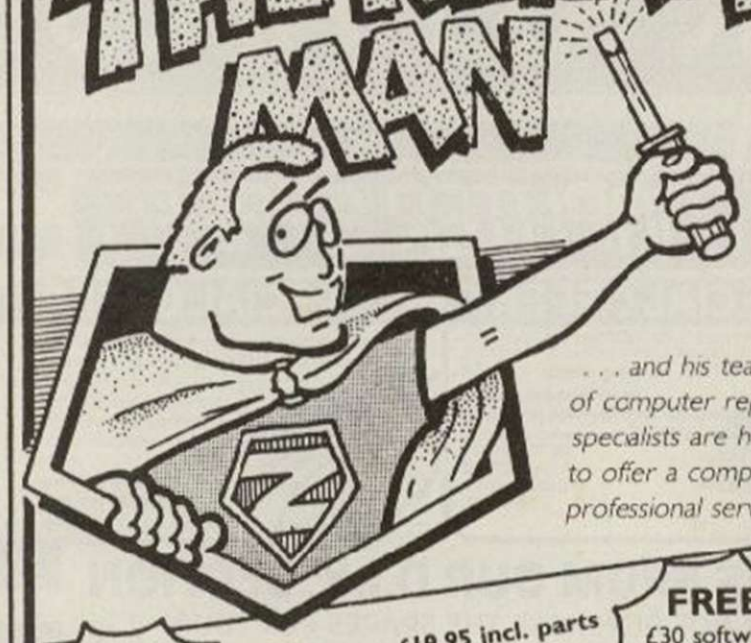
140 High St. West, Glossop, Derbyshire, England
Telephone: Glossop (STD 04574) 66555/67761

SPECIAL OFFER

5 GREAT FREE GAMES
NORMAL RECOMMENDED RETAIL PRICE £33.00
YOURS FREE WITH EVERY SPECTRUM REPAIR

© Copyright Videovault Ltd. No. 150786

THE REPAIR MAN



. . . and his team of computer repair specialists are here to offer a complete professional service.

FREE £30 software with every Commodore 64 repair

Spectrum ... **£19.95 incl. parts**
Commodore 64 **£9.95 + parts**
BBC ..... **£19.95 + parts**

FREE £30 software with every Spectrum repair

We also repair Amstrad, Oric, Atari, QL, Vic 20, Printers, Disc drives etc.

★ 6 MONTH GUARANTEE
★ FAST TURN AROUND
★ WHILE-U-WAIT SERVICE
★ FREE SOFTWARE
★ DIY COMPONENTS

ZEDEM
COMPUTERS LIMITED
2 Kimbolton Road
Bedford MK40 2NR

Call (0234) 2 3645/213032 7 days a week 24 hr. answering service

ASTROLOGY for beginners only £11.50

A Starter Pack comprising a simple program to calculate a horoscope, an introductory booklet & 2 self-teaching programs (how to interpret the horoscope).

No previous knowledge required

Spectrum, BBC/Electron, Oric, Dragon, Tandy/Genie, Commodore 64/PET, Atari, Sharp, Amstrad/Schneider, Colour Genie, MSX, IBM, Apricot, etc.

many more programs for **experienced astrologers** also other micros

Cash with order (add 50p outside UK) or large sae for free catalogue to: –

ASTROLCALC (Dept YC)
67 Peascroft Road,
Hemel Hempstead, Herts HP3 8ER
Tel: 0442 51809 537

OFIC 1 & ORIC ATMOS SOFTWARE
OVER 100 TITLES AVAILABLE

ALL AT DISCOUNT PRICES, e.g. (All ATMOS compatible)
£4.95 Arena 3000, Kilburn Encounter, Skramble, Show Jumping, Waydor, Picture Book, Hangman etc.
£5.50 Cribbage, Frigate Commander, Super Fruit.
£5.95 Chess II, Digger, Defence Force, Draculas Revenge, Elektrostorm, Galaxians, Hamer Attack, Hellon, Land of Illusion, Ice Giant, Warlord, Mr Wimpy, Mushroom Mania, Patsa Blasta, Panic, Rat Splat, Scuba Dive, Spooky Mansion, Special Ops, Trouble in Store, Ultima Zone, Johnny Reb, Paras.
£6.50 Attack Cyberman, Backgammon, Chopper, Draughts, Ghost Gobbler, Invaders, Probe 3, Trickshot, Zebbie, Gubbie, Playground 21.
£8.95 Catagoric, Classic Racing, Maniac Miner, Space Shuttle, 4 Games Children.
£7.50 DonJuan, Trans Al 1, Atmos Extended Basic, Zenon II
£7.95 Vew to a Kill.
£11.50 Author, Account Book, OricCalc, Oric Mon, Oric Forth, Oric Base, Orion Assembler/disassembler
£14.95 The Quill Adventure Writing System.

Dust Cover £2.95. On Off Reset Switch £4.50
Disc Drive £179.95 (Disc Software Please Call)
CH/POs To:- **O. J. SOFTWARE** Prices incl U.K. P&P
273 Mossy Lea Rd., Wrightington
Wigan, Lancs. WN6 9RN Tel: (0257) 421915
Overseas Please Add 50p; Europe £1; Others per item
Write or Phone for FREE List 784

Spectrum Repairs

£14.90 inclusive of labour, parts + p&p. Fast reliable service by qualified engineers. Average repair 24 hrs. 3 mths guarantee. For help or advice ring:

HS Computer Services
2 The Orchard, Warton
Preston, Lancs. PR4 1BE
Tel: 0772 632686 327

AMSTRAD & ORIC
Software Club

200+ Amstrad & 160+ Oric/Atmos titles now available.
SPECIAL AMSTRAD OFFER THIS MONTH
Send SAE stating make of computer to: The Software Club, 26 Beechley Drive, Cardiff CF5 3BH.
(U.K., BFPO & Eire applications only)

CABLES

Amstrad Printer Cable	£8.50
Amstrad Monitor Cable	
QL Serial Cable	£7.00
QL Joystick Adaptors	£4.50
QL Monitor Cables	
ZX Serial Cable	£8.50
ZX Microdrive Cable	£5.00
BBC Prnter Cable	£7.50
MSX Printer Cable	£8.50
Atari Prnter Cable	£9.50
IBM Printer Cable	£9.50
Printer Extension Cable	£8.50
QL Joystick Adaptor	£4.00
Microdrive Cable	£4.00
Disk Drive Cables	£7.50

INTERFACES

QL Centronics Printer Interface	£29.00
ZX Centronics Printer Interface	£29.00
Apple 2C Centronics Printer Interface	£29.00
512K Expander RAM for QL	£125.00

TECH LINK, 31 Salisbury Rd, St Annes, Bristol,
BS4 4EL, Tel (0272) 715370 24hr Service

ENFIELD COMMUNICATIONS
The Computer Repair Centre

COMMODORE 64 REPAIRS
FAST RELIABLE SERVICE
3 MONTHS GUARANTEE
MAIL ORDER OR CALL IN

135 HIGH STREET
PONDERS END
ENFIELD,
MIDDLESEX EN3 4EB

01-805 7772

SINCLAIR REPAIR SPECIALISTS

SPECTRUM/+ REPAIRS **£12.00**
KEYBOARD FAULTS ..... **£9.00 – £13.00**
PERIPHERALS ..... **Price on application**

ALL PRICES FULLY INCLUSIVE OF LABOUR, PARTS, VAT + P&P

3 MONTHS GUARANTEE

I. T. (WESTERN) ELECTRONICS
UNIT F2A + F3
AVONSIDE ENTERPRISE PARK
NEW BROUGHTON ROAD
MELKSHAM, WILTSHIRE
Telephone: 0225 705017

FREEPOST SINCLAIR REPAIRS
Guaranteed Six Months

We have been maintaining all types of computer systems from mainframes to micros for over 15 years and offer you:

- Full overhaul and update with each repair
- Six months warranty on *whole* computer – not only the repair done
- 24hr turnaround on most faults – including soak test
- Returned to you by first class post fully insured
- Freepost – we pay the postage both ways
- All inclusive price for any fault **£20**

MP ELECTRONICS, FREEPOST 2
Dereham, Norfolk NR19 2BR
Tel: 036287 327

SPECTRUM REPAIRS

From £3-£19 incl. all parts, labour and 3 month Guarantee.

From Bristol's Sinclair Specialists

MICRO FARE
296 Gloucester Road, Horfield,
Bristol
Tel: 0272 46575

AMSTRAD 3" DISKETTES

1	£4.70
10	£45.00

Also Dysan, Precision 3M diskettes. Printer ribbons a speciality.

Pearldeck Trading Ltd
FREEPOST, Billingford,
DISS, Norfolk IP21 4BR

SINCLAIR SERVICE CENTRE

Fast repair service for Spectrum: ZX81 interface 1: microdrive. All units repaired to original standard by our H.N.C. qualified staff average repair cost £15.00. But for free estimate send £1.95 return postage with a brief description of your fault: turnround approx 24 hours: established international service: our work is fully guaranteed. Personal callers welcomed.

QUANTUM 33 City Arcade,
Coventry CV1 3HX Tel: (0203) 24632

ZX SPECTRUM UTILITIES

Huge range of discount tapes including:

TASWORD TWO	£11.90	TASPRINT	£8.90
TRANS-EXPRESS	£8.95	TASCOPY	£8.90
GRAPHMATE Bar, Line & Pie charts			£5.95
M/DRIVE CONTROLLER 1-key commands			£5.95
MAILING LIST with label printer			£5.95
HOME BUDGET	£5.00	BANK ACCOUNT	£5.00
FLEXI-FILER	£5.95	SPEEDYLOAD	£3.95
CHARACTER SET RE-DESIGNER PACK			£3.95

SAE/IRC Catalogue or £1 (refundable) for detailed VU-CAT cassette (£2 abroad)

SD MICROSYSTEMS (DEPT YC)
P.O. BOX 24, HITCHIN, HERTS, UK

ROGER COMPUTER SOFTWARE

AMSTRAD CPC, SHARP MZ-700
CBM 64, MSX, ELECTRON, BBC
Educational, Business and Games software
Send a SAE for details stating micro to:-
ROGER COMPUTER SOFTWARE
2 RIVERWAY GARDENS, THE MEADOWS,
NOTTINGHAM NG2 3LL
Trade Enquiries Welcome

A.F.I. LISP for the Sinclair Spectrum (and Plus). Specifications include: 4K/5K cells, external oblist and p.d. stack, over 70 functions, 64-col full-screen integral editor, Interface-1 and **microdrive compatible.** Plus full documentation with a turtle graphics example.
For only **£16.00 inc. (+ £1.50 Export)** *From:*
AFI SOFTWARE, PO Box 149, London SW17 9LB

VELDA PUBLISHING

THE SPECIALISTS PRODUCING THE CLEAREST ENGLISH W.P. GUIDES

LOCOSCRIPT WORDSTAR NEWWORD CARDBOX
All at £5.00 each (thousands sold)
Printed or Audio versions same price
French and Dutch versions of LOCOSCRIPT also available

1 LANDSEER ROAD, WESTBOURNE, BOURNEMOUTH, DORSET BH4 9EH
Telephone: 0202 762401

SPECTRUM SOFTWARE

Each of below microdrive cartridge £9.75
FREE TEXT DATABASE & INFORMATION SYSTEM
Easy to use, multi-purpose, address book, diary, letters lists, tables. Random access, input, edit, search, print.

MICRODRIVE MANAGEMENT AND RECOVERY PACKAGE
Copy any type of files or cartridges, even on one drive. Sensible CAT, analyse problems, recover corrupt files.

MACHINE CODE SYSTEM (also on tape £7.95)
Assembler, Dis-assembler, test, debug, trace features. On-line machine code learning, teach yourself booklet.

ROYBOT YC6, 45 HULLBRIDGE ROAD
RAYLEIGH, ESSEX SS6 9NL
Write or tel: 0268 771663 for leaflets

HOME ACCOUNTS. Put your house in order! Probably the best home use for your computer! Comprehensive coverage of bank acounts, credit cards, HP, standing orders etc. Inbuilt accuracy check for all transactions. Cashflow projection. For all Amstrads, Commodores and Spectrums. £9.95 or free details from DISCUS, 18 Bedford Road, Ilford, IG1 1EJ. Tel: 01-514 4141 (24 hours 'live').

477

AMSTRAD and Oric Software Club 550 + Amstrad Inc PCW and 170 + Oric titles now available. Send SAE stating which computer you own to The Software Club 26 Beechley Drive, Cardiff.

COMPUTER BROKEN

Have it repaired and working again in no time. At a fixed price. All parts include parts, labour, VAT and return postage.

Spectrum/Plus	£16.95	QL	£34.95
Amstrad 464/664	£34.95	BBC (A or B)	£29.95
Electron	£24.95	Commodore 64 (not VSU)	£29.95
C64, Vic 20 (exchange)	£29.95		

Please send computer with check or Postal Order.

MICRO:MEND

The Old School, Main Street, FARCET, Peterborough PE7 3DB.
Telephone: (0733) 241718

TAPE and DRIVE SPECTRUM and AMSTRAD UTILITIES

Yes LERM, famous for our SPECTRUM programs, now has vital utilities for AMSTRAD owners. We also offer on ALL our products:
★ A FULL MONEY BACK GUARANTEE
★ FULL MANUALS
★ AN UPDATE SERVICE to get the latest version at a reduced price.

★ ★ SPECTRUM ★ ★

TU8 – ALL SPECTRUM 48K and PLUS OWNERS NEED this specialist tape utility.
Send SAE for FULL DETAILS of this AMAZING program for Tape back-up and drive transfer.
★ Simple operation. Manages the seemingly impossible including fast/clicky/none standard tone leaders etc.
★ Manages 100% accurately MOST 48K plus programs.
★ Includes TONE and Baud rate (speed) measurer.
★ Clicky/Jerky leaders can be converted COMPLETELY to normal.
★ Handles Headerless parts etc, etc.
TU8 ON TAPE £6.99 (or £7.99 on m/drive cartridge)

TAPE to DRIVE transfer for SPECTRUM OWNERS
Transfer Pack 2 – A sophisticated package of programs INCLUDING TU8, other utilities, allows drive transfer of many programs.
★ includes header reader, bytes chopper, bytes mover.
★ Extra utilities (REM kill, VAL creator, FUN program for m/drive owners).
★ 5 information sheets giving details on drive transfer 40 popular programs.
★ Manages virtually all jerky/clicky leaders to drive.
★ Full manual, sample transfers, technical information.
GIVE NAME of your drive system (eg m/drive, Wafa, Opus)
ONLY £11.99 (£12.99 on m/drive cartridge)

Information sheets – up to no. 18 available – £1 each includes MANY top 20 hits!

MICROTRANS – 2 programs for m/drive owners. FAST and EASY DRIVE to DRIVE and TAPE to DRIVE (inc HEADERLESS – Does NOT convert programs). Plus multiple erase program (inc true CAT, printer output) etc, etc.
ONLY £3.50 on tape, £4.50 on cartridge – AMAZING!

★ ★ AMSTRAD ★ ★

TAPESPEED TWO (TS2) – ESSENTIAL FOR ALL AMSTRAD OWNERS

Convert your slow loading software from 1000 to a max of 3600 baud. Stop and study programs.
★ AMAZING – now manages MOST of the clicky leaders – some will now run on the 664/6128 for 1st time!
★ Fully automatic. It loads in continuously up to 44K.
★ Save at range of 9 speeds.
★ Permanent display of HEADER plus STATUS information.
★ Motor on/off. Insert PAUSE. Rerroves protection.
★ Handles HEADERLESS files, and PULSED/clicky leaders.
★ Handles AMSTRAD programs with Spectrum loaders. Speed (Baud rate) detector.
★ VERY SIMPLE TO USE – FULL MANUAL

PRICE ONLY £6.99 – state 464, 664, or 6128

DISC MANAGER ONE. – for 464 + 6128 + 664
Essential to help you manage your AMSTRAD drive. No risk – try it and see how useful it can be.
★ Does a CAT which can then be used to do repeat ERASURES very easily. Gives disc type. Memory free/used.
★ 2 Disc editors – edit or study sectors of a disc.
★ Recover ERASED files.
★ Simple and fast whole disc or sector BACKUP copier.
★ Send outputs to printer (CAT, sector contents, etc)
★ Unsecured for easy adaption/drive transfer.
★ Menu driven – FULL manual.

PRICE only £5.99 – amazing!

THE PRICES QUOTED ARE ALL INCLUSIVE EXCEPT overseas: add £1 within Europe, £1.50 others. SAE for more information

LERM, DEPT YC, 11 BEACONSFIELD CLOSE, WHITLEY BAY, TYNE AND WEAR.

60 GAMES
(SPECTRUM, AMSTRAD, BBC)

This is no joke. We really are selling 60 of the highest quality games all on a twin cassette pack and all for only £8.95. 60 GAMES contains games of a very high quality, many of which were previously sold at £7.95 each. 60 GAMES is available NOW in a twin cassette package at only £8.95 for the 48K Spectrum, Spectrum+, Spectrum 128, Amstrad 464, 664, 6128, and BBC model B computers. Please state computer when ordering. (Amstrad owners can buy 60 games in a twin disc package at £17.95).

60 GAMES IS PROBABLY THE ONLY GAMES TAPE YOU WILL EVER NEED

Make cheques/PO's payable to: **MAGNUM COMPUTING**

Send orders to:

MAGNUM COMPUTING, Dept YC, PO Box 228, Harpenden, Herts AL5 1LQ
Enquiries on 05827 69152 48 hour despatch

DISCS

MAXELL 5½in.

SSDD 48 tpi MD1D	£15.90 per 10
DSDD 48 tpi MD2D	£18.90 per 10
DSDD 96 tpi MD2DD	£22.90 per 10

VERBATIM 5½in.

SSDD 48 tpi MD525	£14.90 per 10
DSDD 48 tpi MD550	£16.90 per 10
DSDD 96 tpi MD557	£19.90 per 10

SONY 3½in.

SSDD D3440	£19.90 per 10
DSDD D4440	£29.90 per 10

AMSTRAD 3in.

CF2	£29.90 per 10

Official Government and Educational orders welcome
All prices include p&p
Please add 15% VAT

RUGBY MICRO SPARES
30 Oxford Street, Rugby CV21 3NF
Tel: (0788) 71643
Callers welcome by Appointment

SUNARO

ATARI OFFER!!

£1.00 off ALL orders over £15.00

Polar Pierre	C/D	£8.50/£12.75
Aztek	C/D	£8.50/£12.75
Solo Flight II	D	£12.75
Apshal Trilogy	D	£12.75
Alternative Reality	D	£16.95
The Pawn (ST)	D	£21.95
Time Bandit (ST)	D	£26.95

Payment by cheque/PO/Access

Send to:
SUNARO SOFTWARE (YC)
PO Box 78, Macclesfield, Cheshire SK10 3PE
Telephone: 0625 25228

LONDON COMPUTER REPAIR CENTRE

★ Spectrum, Commodore, BBC, Atari, Amstrad etc.
★ Low cost repairs from £12.00
★ Collection & delivery optional
★ Used Micro's bought, sold, exchanged.

Call **NIGEL: 01-863 7166**

MICRO SUPPORT

Unit 3, 15 Springfield Road, Harrow, Middx, HA4 1QF.

LETTA-HEAD PLUS

An ENTIRELY ORIGINAL utility program for the 48K Spectrum to design and print your own business & personal stationery, letterheads, orders, receipts, labels & posters. The PLUS version now includes:
★ Library of 25 fonts including foreign sets.
★ Fast, compiled, editor to create new fonts.
★ All characters are proportionally spaced.
★ 81 different character sizes.
★ Scroll, inverse & erase any screen portion.
★ Variable thickness box function.
★ Improved graphics for logo design.
★ Or use SCREEN$ from any other source.
★ Print headings in 18 different sizes.
★ Design any size label up to 4x2".
★ Special cassette label option.
★ Many more features!
Price: £9.00 cassette, £10.50 cartridge; Updates from original LETTA-HEAD £2.00.

DUMPY

All the screen dumps you will ever need! No need to understand assembler, just follow the menu. Unlike other screen dump software, DUMPY is a screen dump generator; it creates the machine code, relocates it and saves it ready for you to use in your programs.
★ Creates code to suit any program.
★ Definable start column, start & end lines.
★ Or automatic screen area determination.
★ Prints any portion of screen–up to 24 lines.
★ Single, double or quad density.
★ 9 widths and 3 heights of output.
★ Plain black and white copy.
★ Or shaded colour representation.
★ Tab to any position on paper.
★ Many more features.
Price £7.50 cassette, £9.00 cartridge.

LINE-O-TYPE

NEW!! Turns your Spectrum and printer into an electronic typewriter, superb for addressing envelopes or filling in forms, and a text file formatter; print those Tasword files out professionally.
★ Full WYSIWYG line editor.
★ Library of 25 fonts including foreign sets.
★ Fast, compiled, editor to create new fonts.
★ Single or double size characters.
★ Easily switchable underline.
★ True proportional spacing and justification.
★ Loads files from any storage device.
★ Prints files as found, or allows editing.
★ Double density print, so NLQ.
★ Printing multi-tasked with keyboard use.
★ Many more features.
Price £8.50 cassette, £10.00 cartridge.

All Bradway Software programs drive Epson type printers (Brother, Star, M-T, Shinwa, Centronicz etc) via Hilderbay, Kempston, Tasman, Morex, Wafadrive, Interface 1, ZX LPrint III, and Opus interfaces.

P.S. Need just a few labels but no-one will sell less than 1000? Send an sae for details of bradway Software "QUIDSWORRTH" service!

Bradway Software (YC), 33 Conalan Avenue, Sheffield, S17 4PG

FAULTY SPECTRUM?

As you are probably aware from press reports Sinclair Computers no longer have a repair department.
Olur computer repair workshop has been an OFFICIAL Sinclair Repair Depot for the past six years and we are pleased to announce that we will continue to do your out of guarantee repairs as in the past.
Send your faulty computer DIRECT

SPECTRUM	£18.75 inc parts
ZX81	£11.50 inc parts
16K RAM	£9.95 inc parts
MICRODRIVE	£15.95 inc parts
INTERFACE 1-11	£18.75 inc parts

CALL OR SEND WITH CHEQUE OR P.O.

T.V. SERVICES OF CAMBRIDGE LTD
FRENCH'S ROAD
CAMBRIDGE CB4 3NP
Tel: 0223 311371

WE needs the ORIC-CALLS

WE has lots of goodies for the **ORIC**

Please contact us.

W.E. (Software), Foley Bank, Worcester Road,
Great Malvern, Worcestershire WR14 4QW.
Telephone (06845) 69059 Prestel MBX – 684569059

W.E. (Software)

U.K. Agents for Eureka Informatique/Oric Products

SCOTLAND'S No 1

for home and personal computer repairs specially fast Spectrum service.

★ *Same day for most faults*
★ *1 hour if delivered personally*
★ *Free estimates*
★ *Upgrades. Membranes and P.S.U's*
★ *3 mth. warranty on work done*
★ *Open 6 days a week*

Also BBC/CBM/ORIC and PERIPHERALS

MICRO-SERV

95 Deerdykes View
Westfield Industrial Estate
Cumbernauld
Tel: Cumbernauld 02367 37110
Trade, schools and dub discount given.

Stay ahead of the crowd. Subscribe to *QL World*

Copies of the latest issue of *QL World* disappear fast from the shelves. If you cannot go to the shops on our publication date, you can miss the mixture of news, reviews and features which make *QL World* the only magazine for serious QL users.

The only way to avoid possible disappointment is to subscribe to the magazine. In that way, a copy will drop on to your doormat each and every month. Copies are sent direct by our printer, so by subscribing you should receive the magazine even before it reaches newsagents.

A subscription also makes an ideal present for someone who takes the QL seriously. Why not make a present of a subscription?

To subscribe to *QL World*, complete the order form and send it, together with a cheque or postal order for £15, for the U.K. and £30 for Europe, to the address shown. Do not delay. Send your order now and relax in the knowledge that you will never again miss a copy of *QL World*.

Sinclair/QL World (Subscriptions) Oakfield House, Perrymount Road, Haywards Heath, RH16 3DH.

Name _____

Address _____

_____

_____ **Postcode** _____

SELL IT WITH *Your* **COMPUTER**

CLASSIFIED ORDER FORM

Classified Rates

Linage: 60p per word (Min 20 words) — prepayable

Linage advertisers should complete the form provided in BLOCK CAPITALS. Phone number counts as 2 words. Name and address to be paid for if used in advertisement. Box Number if required is £7.00 extra.

Display — rates per scc (Min 2scc)

One insertion	:	£10.00
Three insertions	:	£9.70
Six insertions	:	£9.50
Twelve insertions	:	£9.00

Display advertisers should provide separate copy and preferably reserve space by phone (01-222 9090)

Method of Payment

Cheques etc. should be made payable to Focus Investments Ltd., and crossed. I enclose herewith cheque/PO for

£.....

Post to:

Cut out the order form and return together with your remittance to: Classified Department, Your Computer, 79-80 Petty France, London SW1 9ED.

THIS FORM SHOULD BE RETURNED BY 30th JULY FOR THE SEPT ISSUE OR BY 29th AUGUST FOR THE OCTOBER ISSUE

Please insert the following advertisement in Your Computer Classified Section

					LINAGE	PLUS 15% VAT	TOTAL
					£12.00	£1.80	£13.80
					£15.00	£2.25	£17.25
					£18.00	£2.70	£20.70
					£21.00	£3.15	£24.15
					£24.00	£3.60	£27.60
					£27.00	£4.05	£31.05
					£30.00	£4.50	£34.50

No. of insertions required ☐ Box No. required YES/NO

NAME *(Please include initials).* .....

ADDRESS .....

.....

.....

Daytime tel. no .....

Company Registered Number: 1895201. Registered Office: Sceptre House, 169-173 Regent Street, London W1R 8HE.

EXPRESS SPECTRUM, BBC & COMMODORE REPAIRS!

FREE! SOFTWARE (WORTH £24) WITH EVERY REPAIR*

*Spectrum repairs only

SPECTRUM REPAIRS BETWEEN £9 and £20

BBC REPAIRS BETWEEN £14 and £45

COMMODORE REPAIRS BETWEEN £14 and £35

When we say **NO HIDDEN COSTS** we mean it!

NO HIDDEN EXTRAS

FIRST to provide 'while-u-wait' service.

FIRST with international repairs.

FIRST to provide Insured/ Recorded Delivery on return journey.

FIRST with **LOW CHARGES** (e.g. £9 for keyboard faults).

FIRST with discounts for Schools, Hospitals and H.M. Forces.

FIRST to charge prices that are **FAIR** to you!, we do **NOT** charge **HIGH FIXED** prices!

WHY PAY HIGH FIXED PRICES? N.B. OUR PRICES INCLUDE **VAT,** P&P and INSURED Delivery!

REMEMBER WE HAVE A REPUTATION TO LIVE UP TO! If you must insist on paying a HIGH FIXED price of £19.95 + VAT = £22.95, we will donate the difference between that price and our charge, to the charity of your choice!

PHONE or SEND computer (without power supply or leads) for FREE NO-OBLIGATION estimate! If you don't like our estimate we will return your computer **AND** refund the postage incurred.

WE set the STANDARDS and PRICES others follow!

MANCOMP LTD., (Dept. SU5),
Printworks Lane, Levenshulme,
Manchester M19 3JP.

Tel: **061-224 1888**
or **061-224 9888**

- **FIRST** for **PROFESSIONALISM** 'Of all the repair companies 'Sinclair User' spoke to, MANCOMP seemed the most professional when it came to advice and a helpful attitude'. AUGUST '85.
- **FIRST** for **LOW PRICES** 'My Spectrum blew recently. I took it to MANCOMP, who fixed it in 8 mins and for less than £10. They are local, 'clued-up' and blindingly efficient!'. COMPUTER COLUMN, '4 HEATONS DIGEST', (Vol. 1, No. 11)
- **FIRST** for **ADVICE AND HELP** 'I have come across a firm that will be more than willing to advise you as to how to remedy your problem. They are called MANCOMP, and as well as repairing faulty Spectrums, are also quite willing to discuss your problems with you, and offer reasonably cheap and (MORE IMPORTANTLY) CORRECT cures.' Phil Rogers 'POPULAR COMPUTING WEEKLY' JAN. '85.
- **FIRST** for **SPEED** 'One firm, at least, can usually effect any necessary repair 'over-the-counter' in 45 minutes. Based in Manchester, MANCOMP can offer what is arguably the fastest turnaround in the business, the personal callers.'
'CRASH' Magazine, June 1985.
- **FIRST** for **HONESTY.** We let you watch your computer being repaired. Our engineers don't disappear into another room!

ATTENTION ALL MANCOMP CUSTOMERS:
All repair companies have a legal obligation NOT to sell Sinclair spares to the public, otherwise our supplies get cut off and then we would go out of business.

COMPARE OUR GUARANTEE TERMS – YOU DON'T FIND ANY 'HIDDEN CATCHES' – AFTER THE REPAIR!

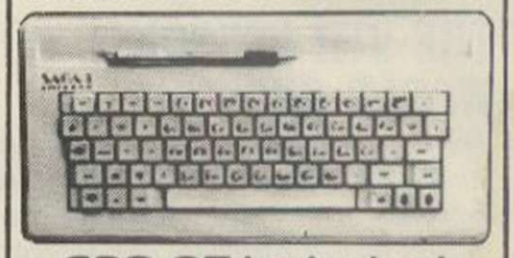
MANCOMP GUARANTEE

If the same fault occurs within 90 days of our repair, we will repair it **FREE** of charge **AND** refund the postage.

FAST, REPUTABLE, HELPFUL, LOW-PRICE SERVICE WHICH REMAINS THE BEST!!

THE BEST KEYBOARD for YOUR **SPECTRUM**

The **SAGA 1 EMPEROR**



£39-95 inclusive!

We repair hundreds of computers every week, so we can pass on our 'bulk-buying' discount to you . . .
Z80A CPU – £1.50 4116 RAM – £0.50
SPECTRUM UPGRADE FITTED – £18

Opus Disk Drives
£200 Inc VAT
Free disketts worth £30 with every Opus

OPEN 7 DAYS 9am-8pm

1st by Popular Choice!

NEXT MONTH

Highlights of the October issue

BUYERS' GUIDE TO LOW-COST PCs

The Amstrad PC may have been launched by the time our September issue is on sale. On the other hand it may not have been. Notwithstanding the availability of the Amstrad PC basher, an increasing number of PC clones are available for little more than the price of other computers associated traditionally with use in the home. Next month we review a selection of such computers and examine their likely impact on the low-cost computer market in the coming months.

SPECTRUM/AMSTRAD COMPUTER REVIEWED

The fruits of much feverish activity in the last few months are due to be unveiled in early September when Amstrad launches its re-engineered version of the Sinclair Spectrum. We review the new machine and assess its impact on the starter pack computer market.

WIN £1,000 PLUS A SELECTION OF INSTANT PRIZES IN OUR AUTUMN GOLD COMPETITION

The front cover of next month's *Your Computer* will feature a special card which could win you £1,000. The special rub-off cards are the key to an exciting competition which, in the succeeding months, offers readers the chance to find the *Your Computer* Crock of Gold.

In addition, instant prizes are available if you have one of the winning cards.

FLIGHTS OF FANCY

We review some of the classic flight simulators of the past and investigate how some more recent offerings compare.

Contents subject to late revision

October issue on sale September 26, 1986

NEWS ● REVIEWS ● HINTS & TIPS
CLUBS ● SOFTWARE GUIDES

DIARY

THE 8TH OFFICIAL COMMODORE COMPUTER SHOW

A Commodore Computer Show, specially for the north of England, will be staged from September 12-14 at the University of Manchester Institute of Science and Technology. More than 15,000 visitors are expected for the show, which will have 75 stands with displays and demonstrations of all the latest hardware, software and peripherals for the Commodore range of home and business computers.

THE 9TH PERSONAL COMPUTER WORLD SHOW

The major event in any computer enthusiast's calendar, the 9th PCW Show will be held at Olympia 1 and 2 from September 3-7. There you will be able to see the latest state-of-the-art hardware and software products for a wide range of home and business machines. Hundreds of new games and products are due to be launched, including the long-awaited Sinclair-Amstrad computer.

AMSTRAD COMPUTER SHOW

Another Amstrad computer show will be held at the Novotel, Hammersmith from October 3-5. All the stands are fully-booked and a record number of exhibitors is expected. A major attraction will be the Amstrad theatre which will host continuous presentations of the latest developments and technology, much of it with a business theme.

ADVERTISERS INDEX

A
AMSTRAD 2, 3
ANIROG 9
ADVANTAGE 88

C
COMPUTER REPAIR CENTRE 64
COMPUMART 88
CUT PRICE SOFTWARE 81

D
DIMENSION 30
DURELL DISK 88
DISPLAY ELECTRONICS 73

E
ECL 27
ENGLISH 74

I
ICS 82

M
MIRRORSOFT 10
MIRACLE 31
MICROMAIL ..... 30 & 74
MIDLAND 74

O
OCEAN 100

S
SWANLEY 82
STAR ..... 16 & 17
SOFTWARE CENTRE 56
SILICA SHOP 58
SUPERIOR 11
SIREN 82
SUPERTEK 81
SCHOOL SOFTWARE 88

T
TROJAN 89
THOUGHTS & CROSSES 20

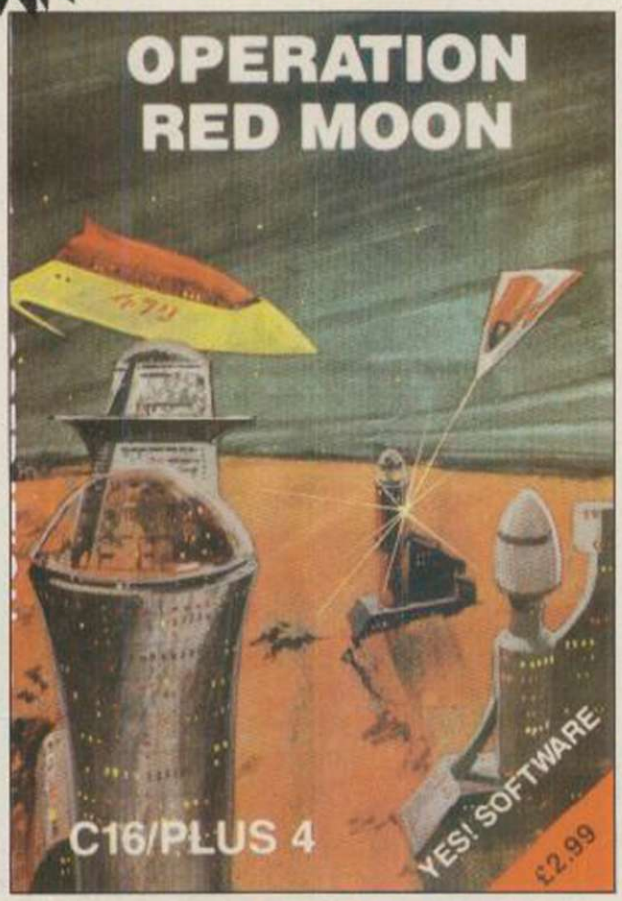
W
WHICH PC 26

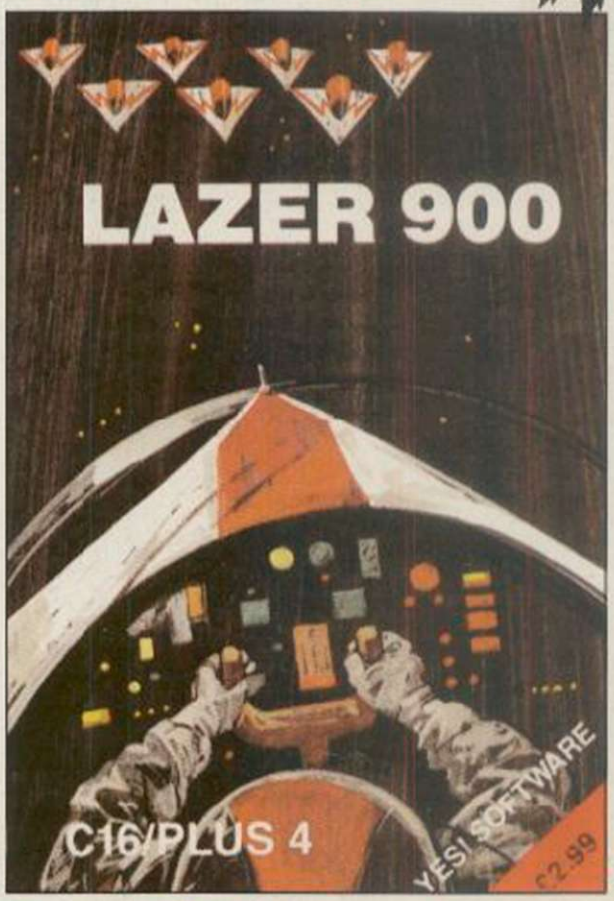
Y
YES 92

C16

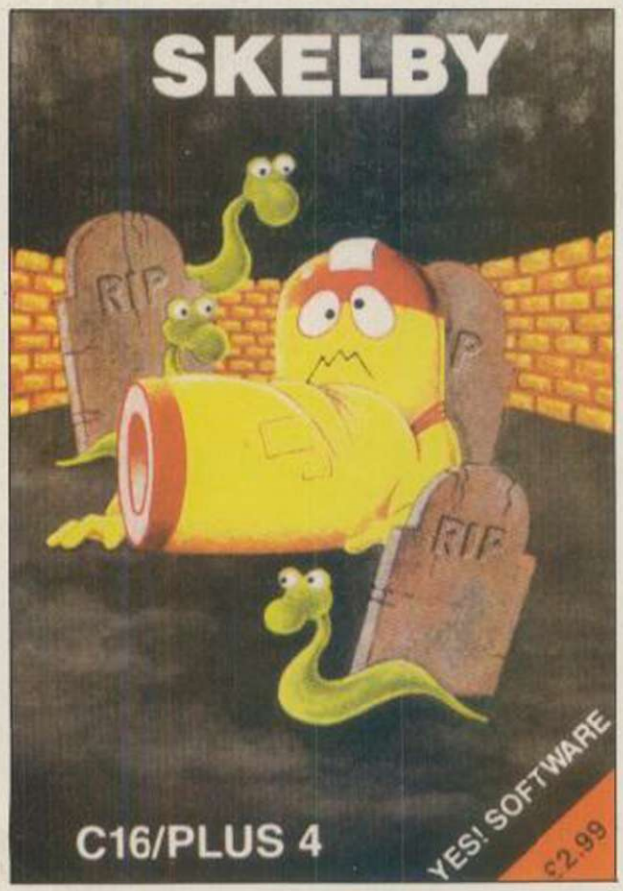
YES! SOFTWARE

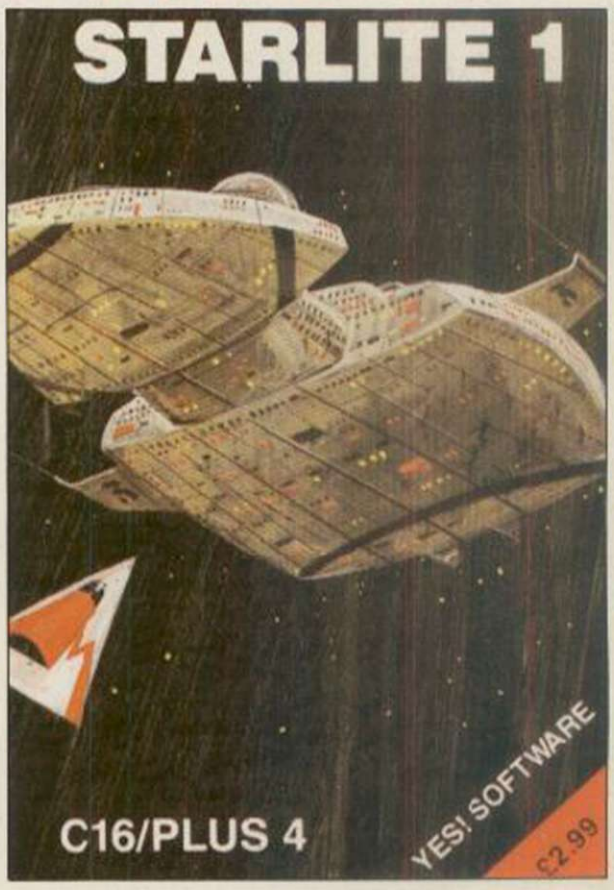
PLUS 4





★ NEW RELEASES ★





AVAILABLE NOW ONLY £2.99 each

FROM ALL GOOD RETAILERS OR IN THE EVENT OF DIFFICULTIES DIRECT FROM

YES! SOFTWARE UNIT 4, NORSIDE, OLDMIXON CRESCENT, WESTON-SUPER-MARE, AVON.

TRADE ENQUIRIES WELCOME ON 0934 28219.

JUST YOU AND A CAR NAMED "KITT"...

KNIGHT RIDER™*

THE ULTIMATE DRIVING TEAM.

SPECTRUM 48K
£7·95
SPECTRUM 48K

from
ocean

COMMODORE 64
£8·95
AMSTRAD

Ocean Software Limited, 6 Central Street, Manchester M2 5NS. Telephone: 061-832 6633 Telex: 669977 Oceans G

Ocean Software is available from selected branches of:
Boots, WHSMITH, John Menzies, WOOLWORTH, LASKYS, Rumbelows, Greens, Spectrum Shops and all good software dealers. Trade enquiries welcome.

©1982 Universal City Studios, Inc. All rights reserved. *a trademark of and licensed by Universal City Studios, Inc.